ARTHAM
RESOURCE MATERIAL

ARTHAM
RESOURCE MATERIAL

SCHOOL OF EDUCATORS
SOE
Learn / Unlearn / Relearn

COMPETENCY-BASED

QUESTION BANK

WITH ANSWER KEY

& STRUCTURED EXPLANATION

CLASS 12

PHYSICS

FEATURES

1 Comprehensive Coverage
Includes detailed question banks for Class 11 & 12 subjects PCMB

2 Skill-based Learning
Develops critical thinking and problem-solving skills essential for cracking tough exams.

3 Score Boosting
Helps to score maximum marks in CBSE exams and increases competitive exam success potential..

4 Answer Key & Structured Explanations
Clear, well-structured explanations and step-by-step solutions to enhance understanding.

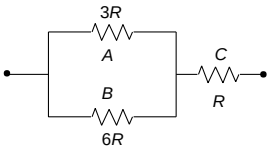
5 Exam Pattern Aligned
Questions modeled after the latest exam patterns to ensure students are well-prepared.

6 Competitive Exam Focus
Specially designed to help students excel in IIT, NEET, JEE, CUET, and other competitive exams.

7 NCERT Integration
Questions and answers are based on the NCERT syllabus, ensuring relevance for both CBSE board exams and entrance tests.

3.CURRENT ELECTRICITY

1. Figure shows a network of three resistance. When some potential difference is applied across the network, the thermal powers dissipated by A,B and C in the ratio



a) 2 : 3 : 4 b) 2 : 4 : 3 c) 4 : 2 : 3 d) 3 : 2 : 4

2. If an increase in length of copper wire is 0.5% due to stretching, the percentage increase in its resistance will be

a) 0.1% b) 0.2% c) 1% d) 2%

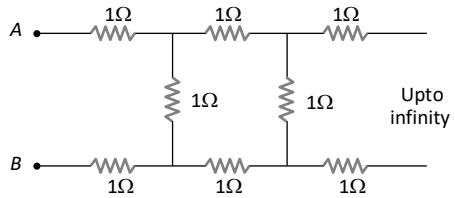
3. Thermoelectric constant of a thermocouple are α and β. Thermoelectric power at inversion temperature is

a) α b) $-\alpha$ c) $\frac{\alpha}{\beta}$ d) $-\frac{\alpha}{\beta}$

4. A current of 1.5 A flows through a copper voltameter. The thickness of copper deposited on the electrode surface of size 50 cm × 10 cm is 20 min will be (density of copper = 9000 kg − m^{-3} and ECE of copper = 0.00033gC^{-1})

a) 3.3×10^{-6} m b) 6.6×10^{-6} m c) 1.3×10^{-5} m d) 2.6×10^{-5} m

5. The resistance between the terminal points A and B of the given infinitely long circuit will be

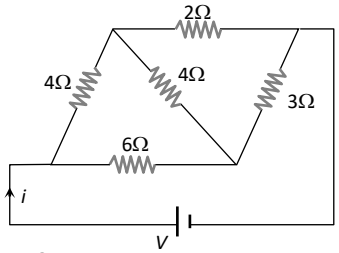


a) $(\sqrt{3}-1)$ b) $(1-\sqrt{3})$ c) $(1+\sqrt{3})$ d) $(2+\sqrt{3})$

6. A battery of emf E and internal resistance r is connected to an external resistance R the condition for maximum power transfer is

a) r<R b) r>R c) r=1/R d) R=R

7. For the network shown in the figure the value of the current i is



a) $\frac{9V}{35}$ b) $\frac{5V}{18}$ c) $\frac{5V}{9}$ d) $\frac{18V}{5}$

8. A resistor has a colour code of green, blue, brown and silver. What is its resistance?

a) $5600\Omega \pm 10\%$ b) $560\Omega \pm 5\%$ c) $560\Omega \pm 10\%$ d) $56\Omega \pm 5\%$

9. A battery having e.m.f. $5V$ and internal resistance 0.5 Ω is connected with a resistance of 4.5 Ω then the voltage at the terminals of battery is

a) 4.5 V b) 4 V c) 0 V d) 2 V

10. The temperature of cold junction of thermocouple is 0°C. If the neutral temperature is 270°C, then the inversion temperature is

a) 540°C b) 520°C c) 640°C d) 58°C

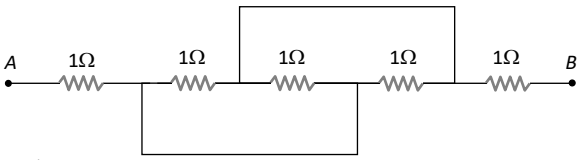
11. The length of a conductor is doubled and its radius is halved, its specific resistance is

a) Unchanged b) Halved c) Doubled d) Quadrupled

12. In India electricity is supplied for domestic use at 220 V. It is supplied at 110 V in USA. If the resistance of a 60 W bulb for use in India is R,the resistance of a 60 W bulb for use in USA will be

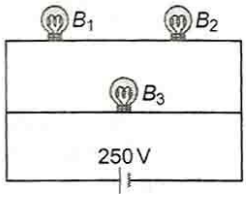
a) R b) $2\,R$ c) $R/4$ d) $R/2$

13. Equivalent resistance between the points A and B is (in Ω)



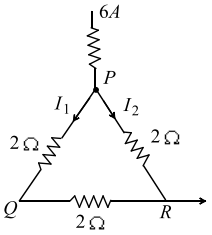
a) $\frac{1}{5}$ b) $1\frac{1}{4}$ c) $2\frac{1}{3}$ d) $3\frac{1}{2}$

14. A 100 W bulb B_1 and two 60W bulbs $B_2$and B_3 are connected to a 250 V source as shown in figure. Now W_1, W_2andW_3 are the output powers of the bulbs B_1, B_2andB_3respectively, then



a) $W_1 > W_2 = W_3$ b) $W_1 > W_2 > W_3$ c) $W_1 < W_2 = W_3$ d) $W_1 < W_2 < W_3$

15. A current of $6A$ enters one corner P of an equilateral triangle PQR having 3 wires of resistances 2Ω each and leaves by the corner R. Then the current I_1 and I_2 are

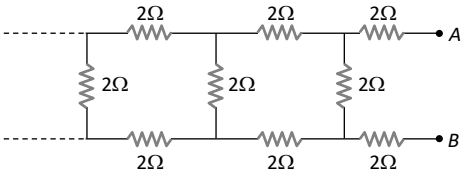


a) $2A, 4A$ b) $4A, 2A$ c) $1A, 2A$ d) $2A, 3A$

16. A cell can be balanced against 110cm and 100cm of potentiometer wire, respectively with and without being short circuited through a resistance of 10 Ω. Its internal resistance is

a) 1.0 Ω b) 0.5 Ω c) 2.0 Ω d) Zero

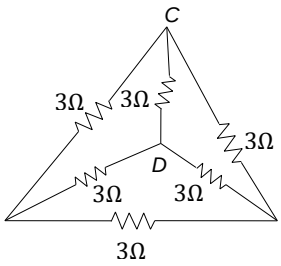
17. The equivalent resistance of the following infinite network of resistance is



a) Less than 4Ω b) 4Ω

c) More than 4Ω but less than 12Ω d) 12Ω

18. The equivalent resistance between A and B in the given circuit is

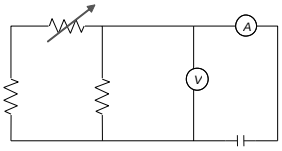


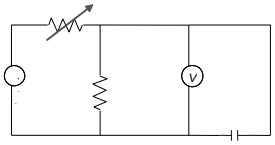
a) 3Ω b) 6Ω c) 12Ω d) 1.5Ω

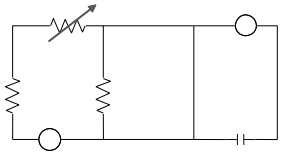
19. The chemical equivalent of silver is 108. If the current in a silver voltmeter is 2 amp, the time required to deposit 27 $grams$ of silver will be

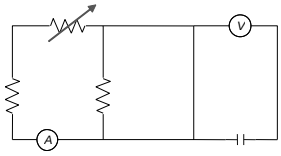
a) 8.57 hrs b) 6.70 hrs c) 3.35 hrs d) 12.50 hrs

20. Which of the following set up can be used to verify the Ohm's law?

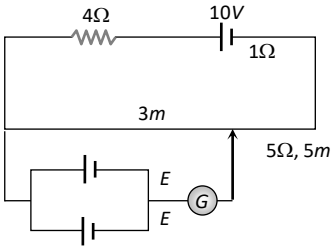
a) 

b) 

c) 

d) 

21. A resistance of 4Ω and a wire of length 5 *metres* and resistance 5Ω are joined in series and connected to a cell of e.m.f. 10 *V* and internal resistance 1Ω. A parallel combination of two identical cells is balanced across 300 *cm* of the wire. The e.m.f. *E* of each cell is

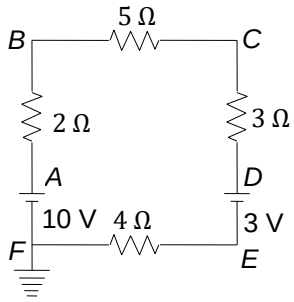


a) 1.5 *V* b) 3.0 *V* c) 0.67 V d) 1.33 *V*

22. Two wires of the same material and equal length are joined in parallel combination. If one of them has half the thickness of the other and the thinner wire has a resistance of 8 *ohms*, the resistance of the combination is equal to

a) $\frac{5}{8}$ *ohm* b) $\frac{8}{5}$ *ohm* c) $\frac{3}{8}$ *ohm* d) $\frac{8}{3}$ *ohm*

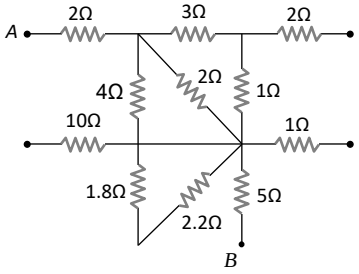
23. In the circuit shown in figure, the points *F* is grounded. Which of the following is wrong statement?



a) *D* is at 5V b) *E* is at zero potential

c) The current in the circuit will be 0.5 A d) The potential at *E* is same whether or not *F* is rounded

24. What is the equivalent resistance between the points *A* and *B* of the network



a) $\frac{57}{7}\Omega$ b) 8 Ω c) 6 Ω d) $\frac{57}{5}\Omega$

25. Which of the following statements is correct

a) Liquids obey fully the *ohm's* law

b) Liquids obey partially the *ohm's* law

c) There is no relation between current and p.d. for liquids

d) None of the above

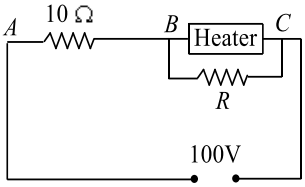
26. In a Wheatstone bridge, $P = 90\Omega, Q = 110\Omega, R = 40\Omega$and $S = 60\Omega$ and a cell of 4 V emf. Then the potential difference between the diagonal along which a galvanometer is connected is

a) -0.2 V b) $+0.2$ V c) -1 V d) $+1$ V

27. Two electric bulbs, one of 200 *volt* 40 *watt* and the other 200 *volt* 100 *watt* are connected in a house wiring circuit
    a) They have equal currents through them
    b) The resistance of the filaments in both the bulbs is same
    c) The resistance of the filament in 40 *watt* bulb is more than the resistance in 100 *watt* bulb
    d) The resistance of the filament in 100 *watt* bulb is more than the resistance in 40 *watt* bulb

28. An electric current passes through a circuit containing two wires of the same material connected in parallel. If the lengths of the wires are in the ratio of 4/3 and radius of the wires are in the ratio of 2/3, then the ratio of the current passing through the wires will be
    a) 3 b) 1/3 c) 8/9 d) None of these

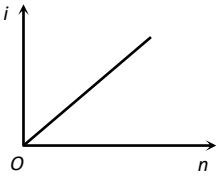
29. A heater is operated with a power of $1000W$ in a $100V$ line. It is connected in combination with a resistance of 10Ω and a resistance R to a $100V$ line as shown in figure. What should be the value of R so, that the heater operates with a power of $62.5W$

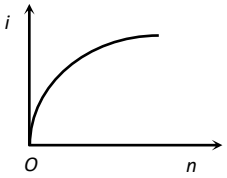


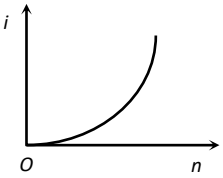
    a) 10Ω b) 62.5Ω c) $\frac{1}{5}\Omega$ d) 5Ω

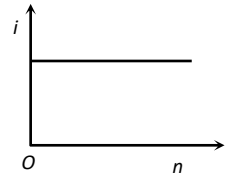
30. A 100 *watt* bulb working on 200 *volt* and a 200 *watt* bulb working on 100 *volt* have
    a) Resistances in the ratio of 4 :1
    b) Maximum current ratings in the ratio of 1 :4
    c) Resistances in the ratio of 2 :1
    d) Maximum current ratings in the ratio of 1 :2

31. A battery consists of a variable number $'n'$ of identical cells having internal resistances connected in series. The terminals of battery are short circuited and the current i is measured. Which of the graph below slows the relationship between i and n

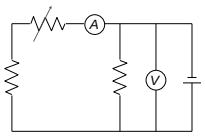
a) 

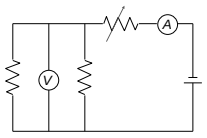
b) 

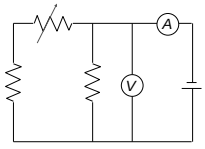
c) 

d) 

32. Which of the following circuits is correct for verification of Ohm's law?

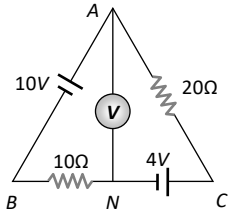
a) 

b) 

c) 

d) None of these

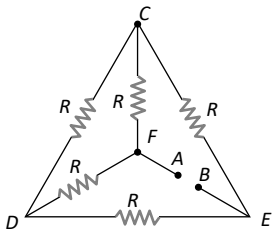
33. The reading of the ideal voltmeter in the adjoining diagram will be



    a) 4 V b) 8 V c) 12 V d) 14 V

34. Masses of the three wires of same material are in the ratio of1: 2: 3 and their lengths in the ratio of 3: 2: 1. Electrical resistance of these wires will be in the ratio of
    a) 1: 1: 1 b) 1: 2: 3 c) 9: 4: 1 d) 27: 6: 1

35. Five equal resistances each of resistance R are connected as shown in the figure. A battery of V volts is connected between A and B. The current flowing in $AFCEB$ will be



a) $\frac{3V}{R}$ b) $\frac{V}{R}$ c) $\frac{V}{2R}$ d) $\frac{2V}{R}$

36. Two conductors of the same material have their diameters in the ratio 1 : 2 and their lengths in the ratio 2 : 1.If the temperature difference between their ends is the same, then the ratio of amounts of heat conducted per second through them will be

a) 4 : 1 b) 1 : 4 c) 8 : 1 d) 1 : 8

37. The emf of a generator is 6V and internal resistance is 0.5 kΩ. The reading of a voltmeter having an internal resistance of 2.5 kΩ is

a) 10^{-3}V b) 10 V c) 5 V d) 0.5 V

38. A railway compartment is lit up by thirteen lamps each taking 2.1 A at 15 V. The heat generated per second in each lamp will be

a) 4.35 cal b) 5.73 cal c) 7.5 cal d) 2.5 cal

39. Potential gradient is defined as

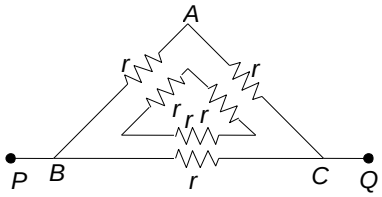
a) Fall of potential per unit length of the wire

b) Fall of potential per unit area of the wire

c) Fall of potential between two ends of the wire

d) Potential at any one end of the wire

40. The resistance across R and Q in the figure.

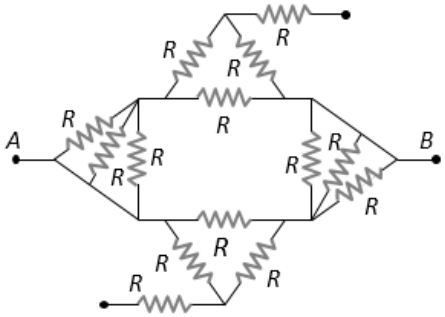


a) $r/3$ b) $r/2$ c) $2r$ d) $6r$

41. By using only two resistances coils-singly, in series or in parallel one should be able to obtain resistance of 3,4,12 and 16 ohm. The separate resistance of the coil are

a) 3 and 4 b) 4 and 12 c) 12 and 16 d) 16 and 13

42. Find equivalent resistance between A and B



a) R b) $\frac{3R}{4}$ c) $\frac{R}{2}$ d) $2R$

43. There are two electric bulbs of 40 W and 100 W. Which one will be brighter when first connected in series and then in parallel

a) 40 W in series and 100 W in parallel

b) 100 W in series and 40 W in parallel

c) 40 W both in series and parallel will be uniform

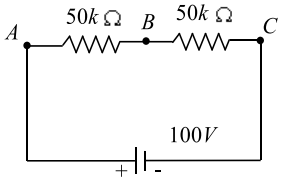
d) 100 W both in series and parallel will be uniform

44. The power of heater is 750 W at 1000°C. What will be its power at 200°Cif $a = 4 \times 10^{-4}$per°C ?
a) 400 W b) 990 W c) 250 W d) 1500 W

45. The deflection in a moving coil galvanometer is reduced to half when it is shunted with a 40 Ω coil. The resistance of the galvanometer is
a) 15 Ω b) 20 Ω c) 40 Ω d) 80 Ω

46. A copper voltmeter is connected in series with a heater coil of resistance 0.1Ω. A steady current flows in the circuit for twenty minutes and mass of 0.99 g of copper is deposited at the cathode. If electrochemical equivalent of copper is 0.00033 gm/C, then heat generated in the coil is
a) 750 J b) 650 J c) 350 J d) 250 J

47. In the adjacent shown circuit, a voltmeter of internal resistance R, when connected across B and C reads $\frac{100}{3}V$. Neglecting the internal resistance of the battery, the value of R is

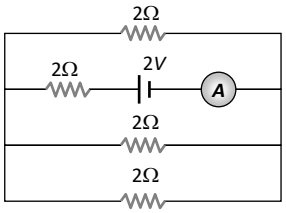


a) 100 $k\Omega$ b) 75 $k\Omega$ c) 50 $k\Omega$ d) 25 $k\Omega$

48. The reciprocal of resistance is
a) Conductance b) Resistivity c) Voltage d) None of the above

49. To decrease the range of an ammeter, its resistance need to be increased. An ammeter has resistance $R_0$and range I. Which of the following resistance can be connected in series with it to decreases its range to I/n?
a) $\frac{R_0}{n}$ b) $\frac{R_0}{(n-1)}$ c) $\frac{R_0}{(n+1)}$ d) None of these

50. The reading of the ammeter as per figure shown is



a) $\frac{1}{8}A$ b) $\frac{3}{4}A$ c) $\frac{1}{2}A$ d) 2 A

51. The accurate measurement of emf can be obtained using
a) Multimeter b) Voltmeter c) Voltameter d) Potentiometer

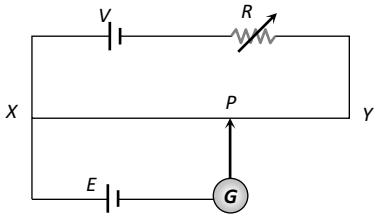
52. Three unequal resistors in parallel are equivalent to a resistance 1 Ω. If two of them are in the ratio 1:2 and if no resistance value is fractional, the largest of the three resistance in ohm is
a) 4 b) 6 c) 8 d) 12

53. A current of 2 A passing through conductor produces 80 J of heat in 10 $seconds$. The resistance of the conductor is
a) 0.5 Ω b) 2 Ω c) 4 Ω d) 20 Ω

54. In a copper voltmeter , if the current (I) and time (t) variations of the type as shown in figure, the mass deposited in 30 min is [Atomic weight of copper is 63.5 and Faraday constant is 96500 C per g equivalent]
a) 0.078 g b) 0.054 g c) 0.039 g d) 0.0195 g

55. The graph between resistivity and temperature, for a limited range of temperatures, is a straight line for a material like
a) Copper b) Nichrome c) Silicon d) Mercury

56. A potentiometer circuit shown in the figure is set up to measure e.m.f. of a cell E. As the point P moves from X to Y the galvanometer G shows deflection always in one direction, but the deflection decreases continuously until Y is reached. In order to obtain balance point between X and Y it is necessary to



a) Decreases the resistance R b) Increase the resistance R

c) Reverse the terminals of battery V d) Reverse the terminals of cell E

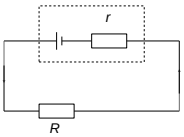
57. The relation between Seeback coefficient (or thermo electric power) S and Peltier coefficient π is given by

a) $S = \pi T$ b) $S = \frac{\pi}{T}$ c) $S = \frac{\pi^2}{T}$ d) $S = \frac{\pi}{T^2}$

58. Electromotive force is the force, which is able to maintain a constant

a) Current b) Resistance c) Power d) Potential difference

59. A cell of internal resistance r is connected to a load of resistance R. Energy is dissipated in the load, but some thermal energy is also wasted in the cell. The efficiency of such an arrangement is found from the expression

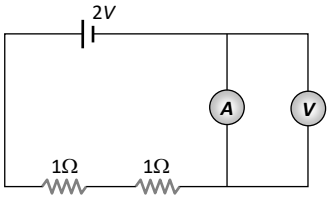


$$\frac{\text{energy dissipated in the load}}{\text{energy dissipatd in the compete circuit}}.$$

Which of the following gives the efficiency in this case?

a) $\frac{r}{R}$ b) $\frac{R}{r}$ c) $\frac{r}{R+r}$ d) $\frac{R}{R+r}$

60. In the circuit shown, A and V are ideal ammeter and voltmeter respectively.Reading of the voltmeter will be



a) 2 V b) 1 V c) 0.5 V d) Zero

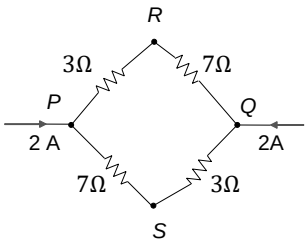
61. An ammeter with internal resistance 90Ω reads 1.85 A when connected in a circuit containing a battery and two resistors 700Ω and 410Ω in series. Actual current will be

a) 1.85 A b) Greater than 1.85 A c) Less than 1.85 A d) None of these

62. The current in a simple series circuit is 5.0.A. when an additional resistance of 2.0 Ω is inserted, the current drops to 4.0 A. the original resistance of the circuit in ohm was

a) 1.25 b) 8 c) 10 d) 20

63. A current of 2A flows in an electric circuit as shown in figure. The potential difference $(V_R - V_S)$, in volts($V_R - V_S$ are potentials at R and S respectively) is



a) -4 b) +2 c) +4 d) -2

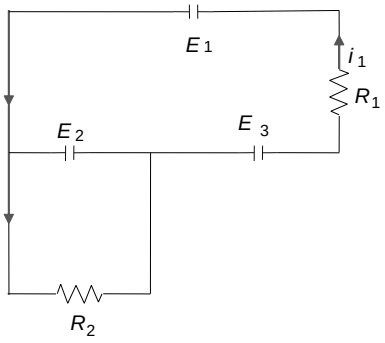
64. A house wife uses a 100 W bulb 8 h a day , and an electric heater of 300 W for 4 h a day. The total cost for the month of June at the rate of 0.05 rupee per unit will be

a) Rs 20 b) Rs 25 c) Rs 30 d) Rs 30 paise 50

65. Two cells, each of e. m. f. E and internal resistance r are connected in parallel between the resistance R. The maximum energy given to the resistor will be, only when

a) $R = r/2$ b) $R = r$ c) $R = 2r$ d) $R = 0$

66. The current i_1 and i_2 through the resistor $R_1 (= 10\Omega)$ and $R_2 (= 30\Omega)$ in the circuit diagram with $E_1 = 3V, E_2 = 3\ and E_3 = 2V$ are respectively.



a) 02.A, 0.1A b) 0.4A, 0.2A c) 0.1A, 0.2A d) 0.2A, 0.4A

67. An electric bulb is rated $60W, 220V$. The resistance of its filament is

a) 708 Ω b) 870 Ω c) 807 Ω d) 780 Ω

68. A certain electrical conductor has a square cross-section, 2.0 mm on side, and is 12 m long. The resistance between its ends is 0.072Ω. The resistivity of its material is equal to

a) $2.4 \times 10^{-6}\Omega$m b) $1.2 \times 10^{-6}\Omega$m c) $1.2 \times 10^{-8}\Omega$m d) $2.4 \times 10^{-8}\Omega$m

69. A wire 20 cm long and 1 mm^2 in cross-section carries a current of 4A when connected to a 2V battery. The resistivity of the wire is

a) $2 \times 10^{-7}\Omega$ m b) $5 \times 10^{-7}\Omega$ m c) $4 \times 10^{-6}\Omega$ m d) $1 \times 10^{-6}\Omega$ m

70. A thermo-$e$mf V appears across a conductor maintained at a temperature difference T. The thomson coefficient is then given by

a) $-T^2 \frac{d^2V}{dT^2}$ b) $T^2 \frac{dV}{dT}$ c) $-T \frac{d^2V}{dT^2}$ d) $-\frac{1}{T^2}\frac{dV}{dT}$

71. The tolerance level of a resistor with the colour code red, blue, orange, gold is

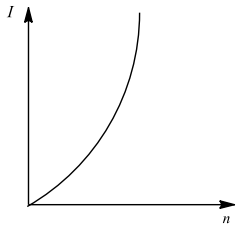
a) $\pm 5\%$ b) $\pm 10\%$ c) $\pm 20\%$ d) $\pm 40\%$

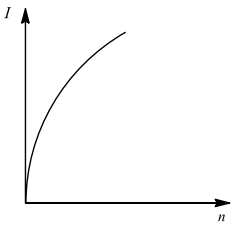
72. For a given thermocouple neutral temperature

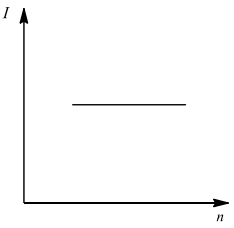
a) Is a constant b) Depends on cold junction temperature

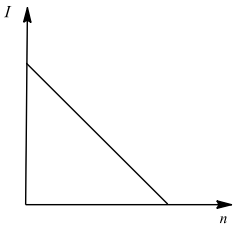
c) Depends on inversion temperature d) Double that of cold junction temperature

73. A battery consists of a variable number (n) of identical cells, each having an internal resistance r connected in series. The terminal of the battery is short-circuited. A graph of current *versus* the number of cells will be as shown in figure

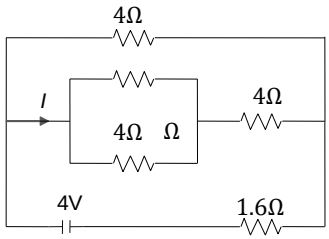
a) 

b) 

c) 

d) 

74. In the circuit shown the value of I in ampere is



a) 1 b) 060 c) 0.4 d) 1.5

75. In a potentiometer of one metre length, an unknown $e.m.f.$ voltage source is balanced at 60 cm length of potentiometer wire, while a 3 volt battery is balanced at 45 cm length. Then the $e.m.f.$ of the unknown voltage source is

a) $3V$ b) $2.25V$ c) $4V$ d) $4.5V$

76. x g of Ag is deposited by passing 4 A of current of for 1 h. How many gram of Ag will be deposited by passing 6 A for 40 min?

a) $2x$ g b) $4x$ g c) x g d) $5x$ g

77. The main supply voltage to a room is 120 V. The resistance of the lead wires is 6Ω. A 60 W bulb is already giving light. What is the decrease in voltage across the bulb when a 240 W heater is switched on?

a) No change b) 10 V c) 20 V d) More than 10 V

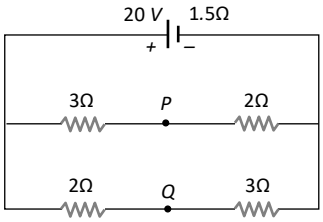
78. Two bulbs 40 W and 60 W and rated voltage 240 V are connected in series across a potential difference of 420 V. Which bulb will work at above its rated voltages?

a) 40 W bulb b) 60 W bulb c) Both will work d) None of these

79. A current of 1.5 A flows through a copper voltmeter. The thickness of copper deposited on the electrode surface of area 50 cm^2 in 20 min is (density of Cu=9000 kgm^{-3}; ECE of Cu $= 3.3 \times 10^{-7} kgC^{-1}$)

a) 1.3×10^{-4}m b) 1.3×10^{-5}m c) 2.6×10^{-4} m d) 2.6×10^{-5} m

80. If in the circuit shown below, the internal resistance of the battery is 1.5 Ω and V_P and V_Q are the potentials at P and Q respectively, what is the potential difference between the points P and Q



a) Zero b) 4 $volts$ $(V_P > V_Q)$ c) 4 $volts$ $(V_Q > V_P)$ d) 2.5 $volts$ $(V_Q > V_P)$

81. A certain charge liberates 0.8 gm of O_2. The same charge will liberate how many gm of silver

a) 108 gm b) 10.8 gm c) 0.8 gm d) $\frac{108}{0.8}$ gm

82. $Watt\text{-}hour$ meter measures

a) Electric energy b) Current c) Voltage d) Power

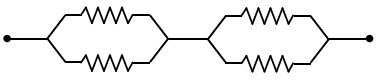
83. A potentiometer having the potential gradient of 2 mV/cm is used to measure the difference of potential across a resistance of 10 ohm. If a length of 50 cm of the potentiometer wire is required to get the null point, the current passing through the 10 ohm resistor is (in mA)

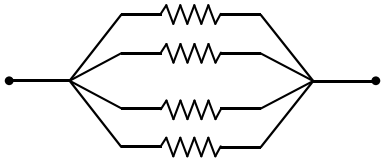
a) 1 b) 2 c) 5 d) 10

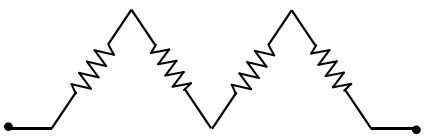
84. Two electric lamps of 40 watt each are connected in parallel. The power consumed by the combination will be

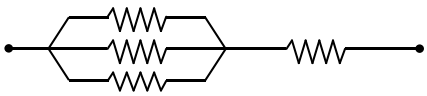
a) 20 $watt$ b) 60 $watt$ c) 80 $watt$ d) 100 $watt$

85. Which arrangement of four identical resistance should be used to draw maximum energy from a cell of voltage V

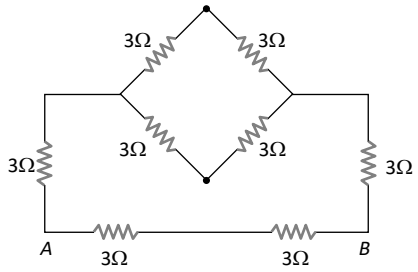
a) 

b) 

c) 

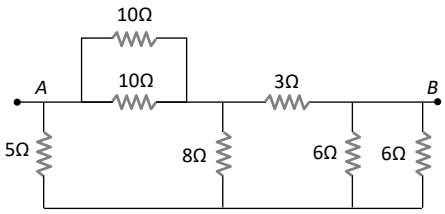
d) 

86. Equivalent resistance between A and B will be



a) 2 ohm b) 18 ohm c) 6 ohm d) 3.6 ohm

87. Seven resistance are connected as shown in the figure. The equivalent resistance between A and B is



a) 3 Ω b) 4 Ω c) 4.5 Ω d) 5 Ω

88. To get maximum current through a resistance of 2.5 Ω, one can use m rows of cells, each row having n cells. The internal resistance of each cell is 0.5 Ω. What are the values of n and m, if the total number of cell is 45?

a) $m = 3, n = 15$ b) $m = 5, n = 9$ c) $m = 9, n = 5$ d) $m = 15, n = 3$

89. Voltmeters V_1 and V_2 are connected in series across a DC line. V_1 reads 80V and has a resistance of $200\Omega V^{-1}$ and V_2 has a total resistance of 32k Ω. The line voltage is

a) 240 V b) 220 V c) 160 V d) 120 V

90. The length of the wire is doubled. Its conductance will be

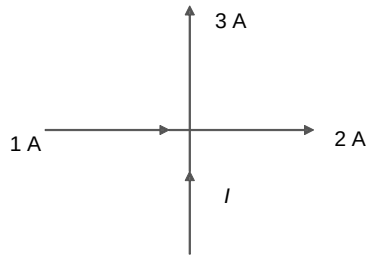
a) Unchanged b) Halved

c) Quadrupled d) 1/4 of the original value

91. A student has 10 resistors of resistance $'r'$. The minimum resistance made by him from given resistors is

a) 10 r b) $\frac{r}{10}$ c) $\frac{r}{100}$ d) $\frac{r}{5}$

92. The value of current I in figure is



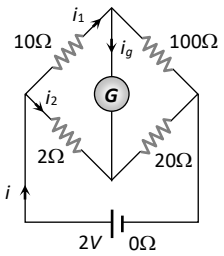
a) 4A b) 6A c) 3A d) 5A

93. Which of the following relation is wrong?

a) 1 ampere ×1 ohm=1 volt b) 1 watt ×1 sec=1 joule

c) 1 newton per coulomb =1 volt per metre d) 1 columb ×1 volt=1 watt

94. In the circuit shown below the resistance of the galvanometer is 20 Ω. In which of the following alternative are the currents arranged strictly in the decreasing order



a) i, i_1, i_2, i_g b) i, i_2, i_1, i_g c) i, i_2, i_g, i_1 d) i, i_1, i_g, i_2

95. A potentiometer wire of length $1m$ and resistance 10 Ω is connected in series with a cell of emf $2V$ with

internal resistance 1 Ω and a resistance box including a resistance R. If potential difference between the ends of the wire is 1 mV, the value of R is

a) 20000 Ω b) 19989 Ω c) 10000 Ω d) 9989 Ω

96. An ammeter reads 0.90 A when connected in series with a silver voltmeter that deposits 2.60 g of silver in 40 min. By what percentage is the ammeter reading is correct? Atomic weight of silver = 108 and 1 F=96500 C?

a) 5% b) 7% c) -5% d) -7%

97. The following four wires are made of the same material and are at the same temperature. Which one of them has the highest electrical resistance?

a) Length=50cm, diameter=0.5 mm b) Length=100cm, diameter=1 mm

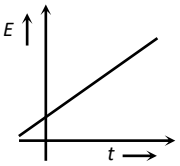
c) Length=200cm, diameter=2 mm d) Length=300cm, diameter=3 mm

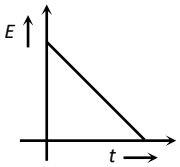
98. A battery of 24 cells, each of emf 1.5 V and internal resistance 2Ω is to be connected in order to send the maximum current through a 12Ω resistor. The correct arrangement of cells will be

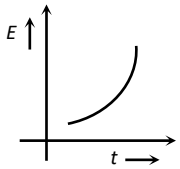
a) 2 rows of 12 cells connected in parallel b) 3 rows of 8 cells connected in parallel

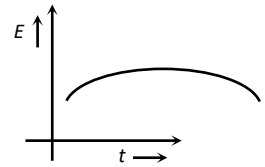
c) 4 rows of 6 cells connected in parallel d) All of these

99. Two different metals are joined end to end. One end is kept at constant temperature and the other end is heated to a very high temperature. The high depicting the thermo e.m.f. is

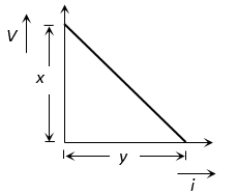
a) 

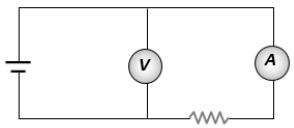
b) 

c) 

d) 

100. In an experiment, a graph was plotted of the potential difference V between the terminals of a cell against the circuit current i by varying load rheostat. Internal conductance of the cell is given by





a) xy b) $\frac{y}{x}$ c) $\frac{x}{y}$ d) $(x-y)$

101. A metallic block has no potential difference applied across it, then the mean velocity of free electrons at absolute temperature T is

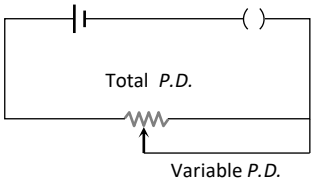
a) Proportional to T b) Proportional to $\sqrt{T}$

c) Zero d) Finite but independent of T

102. Two bulbs of 500 W and 200 W are manufactured to operate on 220 V line. The ratio of heat produced in 500 W and 200 W, in two cases, when firstly they are connected in parallel and secondly in series will be

a) $\frac{5}{2}:\frac{2}{5}$ b) $\frac{5}{2}:\frac{5}{2}$ c) $\frac{2}{5}:\frac{5}{2}$ d) $\frac{2}{5}:\frac{2}{5}$

103. The arrangement as shown in figure is called as



a) Potential divider b) Potential adder c) Potential substracter d) Potential multiplier

104. A fuse wire with radius 1 mm blows at 1.5 A. The radius of the fuse wire of the same material to blow at 3 A will be

a) $3^{1/4}$mm b) $4^{1/3}$mm c) $3^{1/2}$mm d) $2^{1/3}$mm

105. Two cells of same emf$E$ but of different internal resistances r_1 and r_2 are connected in series with an external resistance R. The potential drop across the first cell is found to be zero. The external resistance R

is

a) $r_1 + r_2$ b) $r_1 - r_2$ c) $r_2 - r_1$ d) $r_1 r_2$

106. In a conductor if 3000 coulomb of charge enters and 3000 coulomb of charge exits in time 10 minutes, then the current is

a) 5 ampere b) 10 ampere c) 2.5 ampere d) Zero

107. The resistivity of alloys $= R_{\text{alloy}}$; the resistivity of constituent metals R_{metal}. Then, usually

a) $R_{\text{alloy}} = R_{\text{metal}}$ b) $R_{\text{alloy}} < R_{\text{metal}}$

c) There is no simple relation between R_{alloy} and R_{metal} d) $R_{\text{alloy}} > R_{\text{metal}}$

108. If the temperature of cold junction of thermocouple is lowered, then the neutral temperature

a) Increases b) Approaches inversion temperature

c) Decreases d) Remains the same

109. For obtaining chlorine by electrolysis a current of 100 kW and 125 V is used. (Electro chemical equivalent of chlorine is 0.367 $\times$ kgC^{-1}). The amount of chlorine obtained in one minute will be

a) 1.7616 g b) 17.616 g c) 0.17161 g d) 1.7616 kg

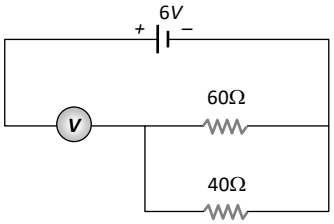
110. The current in a conductor varies with time t as $I = 2t + 3t^2$ where I is in *ampere* and t in *seconds*. Electric charge flowing through a section of the conductor during $t = 2\ sec$ to $t = 3\ sec$ is

a) 10 C b) 24 C c) 33 C d) 44 C

111. A wire of length 5$m$and radius 1 mm has a resistance of 1 ohm. What length of the wire of the same material at the same temperature and of radius 2 mm will also have a resistance of 1 ohm

a) 1.25 m b) 2.5 m c) 10 m d) 20 m

112. The measurement of voltmeter in the following circuit is

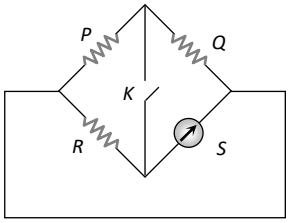


a) 2.4 V b) 3.4 V c) 4.0 V d) 6.0 V

113. An electron (charge $= 1.6 \times 10^{-19} coulomb$) is moving in a circle of radius $5.1 \times 10^{-11} m$ at a frequency of $6.8 \times 10^{15}\ revolutions/sec$. The equivalent current is approximately

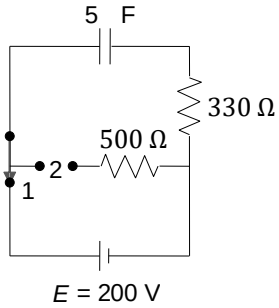
a) $5.1 \times 10^{-3} amp$ b) $6.8 \times 10^{-3} amp$ c) $1.1 \times 10^{-3} amp$ d) $2.2 \times 10^{-3} amp$

114. In the following Wheatstone bridge $P/Q = R/S$. If key K is closed, then the galvanometer will show deflection



a) In left side b) In right side c) No deflection d) In either side

115. The amount of heat generated in 500Ω resistance, when the key is thrown over from contact 1 to 2, as shown in figure is

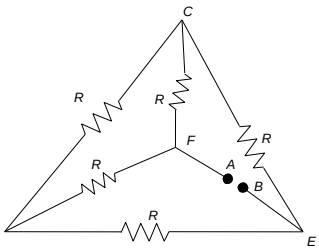


a) 10°C b) 7.5°C c) 5.0°C d) 2.5°C

116. In potentiometer a balance point is obtained, when
   a) The e.m.f. of the battery becomes equal to the e.m.f. of the experimental cell
   b) The p.d. of the wire between the $+ve$ end to jockey becomes equal to the e.m.f. of the experimental cell
   c) The p.d. of the wire between $+ve$ point and jockey becomes equal to the e.m.f. of the battery
   d) The p.d. across the potentiometer wire becomes equal to the e.m.f. of the battery

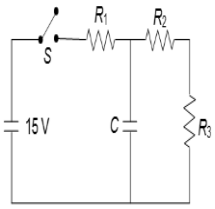
117. With the rise of temperature the resistivity of a semiconductor
   a) Remains unchanged b) Increases
   c) Decreases d) First increases and then decreases

118. Five equal resistances, each of resistance R,are connected as shown in figure below. A bettery of V volt is connected between A and B.The current flowing in FC will be



a) $\frac{3V}{R}$ b) $\frac{V}{R}$ c) $\frac{V}{2R}$ d) $\frac{2V}{R}$

119. $I-V$ characteristic of a copper wire of length L and area of cross-section A is shown in figure. The slope of the curve becomes



   a) More if the experiment is performed at higher temperature b) More if a wire of steel of same dimension is used
   c) More if the length of the wire increased d) Less if the length of the wire increased

120. If 2.2 $kilowatt$ power is transmitted through a 10 ohm line at 22000 $volt$, the power loss in the form of heat will be
   a) 0.1 $watt$ b) 1 $watt$ c) 10 $watt$ d) 100 $watt$

121. The resistor of resistance R is connected to 25 V supply and heat produced in it is 25 Js^{-1}. The value of R is
   a) 225 Ω b) 1 Ω c) 25 Ω d) 50 Ω

122. A galvanometer can be converted into a voltmeter by connecting
   a) Low residence in parallel b) Low residence in series
   c) High residence in parallel d) High residence in series

123. An electric heater of 1.08 Kw is immersed in water. After the water has reached a temperature of 100°C, how much time will be required to produce 100 g of steam?

a) 420 s b) 210 s c) 105 s d) 50 s

124. Two voltameters, one of copper and another of silver, are joined in paralleled. When a total charge q flows through the voltameters, equal amount of metals are deposited. If the electrochemical equivalents of copper and silver are $z_1$and z_2 respectively, the charge which flows through the silver voltameter is

a) $\frac{q}{1+\frac{z_1}{z_2}}$ b) $\frac{q}{1+\frac{z_2}{z_1}}$ c) $q\frac{z_1}{z_2}$ d) $q\, z_2/z_1$

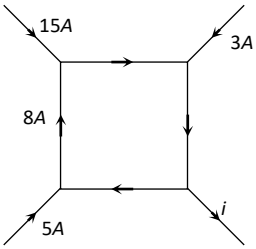
125. A primary cell has an e. m. f. of 1.5 volt, when short-circuited it gives a current of 3 ampere. The internal resistance of the cell is

a) 4.5 ohm b) 2 ohm c) 0.5 ohm d) 1/4.5 ohm

126. An immersion heater is rated 418 W. It should heat a litre of water from 10°C to 30°C in nearly

a) 44 s b) 100 s c) 200 s d) 400 s

127. The figure shows a network of currents. The magnitude of currents is shown here. The current i will be

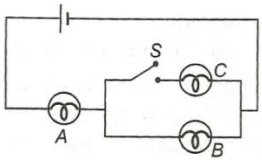


a) 3 A b) 13 A c) 23 A d) -3 A

128. A block has dimensions 1 cm, 2 cm, 3 cm. Ratio of the maximum resistance to minimum resistance between any point of opposite faces of this block is

a) 9 :1 b) 1 :9 c) 18 :1 d) 1 :6

129. In the given figure. A, B and C are three identical bulbs. When the switch S is closed



a) The brightness of bulb A does not change and that of B decreases
b) The brightness of bulb A increases and that of B decreases
c) The brightness of A increases bulb B does not glow
d) The brightness of both bulbs A not B decrease

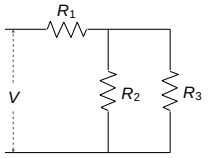
130. The length of a potentiometer wire is 5m. An electron in this wire experiences a force of 4.8×10^{-19}N, emf of the main cell used in potentiometer is

a) 3 V b) 15 V c) 1.5 V d) 5 V

131. 4 cells each of emf 2 V and internal resistance of 1Ω are connected in parallel to a load resistor of 2Ω. Then the current through the load resistor is

a) 2 A b) 1.5 A c) 1 A d) 0.888 A

132. For ensuring dissipation of same energy in all three resistors (R_1, R_2, R_3)connected as shown in figure, their values be related as



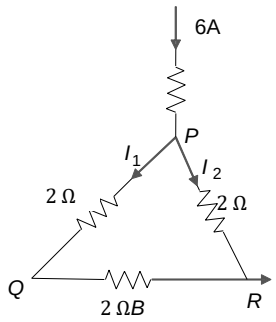
a) $R_1 = R_2 = R_3$ b) $R_2 = R_3$ and $R_1 = 4\,R_2$
c) $R_2 = R_3$ and $R_1 = R_2/4$ d) $R_1 = R_2 + R_3$

133. $n$identical cells, each of emf E and internal resistance r, are connected in series a cell A is joined with reverse polarity. The potential difference across each cell, except A is

a) $\frac{2nE}{n-2}$ b) $\frac{(n-2)E}{n}$ c) $\frac{(n-1)E}{n}$ d) $\frac{2E}{n}$

134. A current of A enters one corner one corner P of an equilateral triangle PQRhaving 3 wires of resistance

2 Ωeach and leaves by the corner R. then the current I_1 and I_2 are



a) 2A, 4A b) 4A, 2A c) 1A, 2A d) 2A, 3A

135. 160W-60V lamp is connected at 60 V DC supply. The number of electrons passing through the lamp in 1 min is (the charge of electron $e = 1.6 \times 10^{-19}$C)

a) 10^{19} b) 10^{21} c) 1.6×10^{19} d) 1.4×10^{20}

136. If a 30 V, 90 W bulb is to be worked on a 120 V line, a resistance of how many ohms should be connected in series with the bulb

a) 10 ohm b) 20 ohm c) 30 ohm d) 40 ohm

137. In a thermo-couple, one junction which is at 0°C and the othe at t°C the emf is given by $E = at^2 - bt^2$. The neutral temperature is given by

a) a/b b) $2\,a/3b$ c) $3a/2b$ d) $b/2a$

138. 5 cells, each of emf 0.2V and internal resistance 1Ω are connected to an external circuit of resistance of 10Ω. Find the current through external circuit

a) $\frac{1}{2.5}A$ b) $\frac{1}{10}A$ c) $\frac{1}{15}A$ d) $\frac{1}{2}A$

139. Two heater wires of equal length are first connected in series and then in parallel. The ratio of heat produced in the two cases is

a) 1 : 4 b) 4 : 1 c) 1 : 2 d) 2 : 1

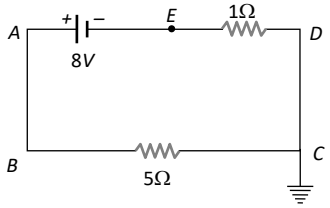
140. A combination of two resistance of 2 W and 2/3 W connected in parallel is joined across a battery of emf of 3 V and of negligible internal resistance. The energy given out per sec will be

a) $\frac{1}{2} \times 3 \times 3$ J b) $\frac{1}{2} \times \frac{1}{3} \times 3 \times 3$ J c) 2×3 J d) $3 \times 3 \times 2$ J

141. When a piece of aluminium wire of finite length is drawn through a series of dies to reduce its diameter to half its original value, its resistance will become

a) Two times b) Four times c) Eight times d) Sixteen times

142. In the given circuit, the potential of the point E is



a) Zero b) $-8\ V$ c) $-4/3\ V$ d) $4/3\ V$

143. An electric fan and a heater are marked as 100 $watt$, 220 $volt$ and 1000 $watt$, 220 volt respectively. The resistance of the heater is

a) Zero b) Greater than that of the fan
c) Less than that of the fan d) Equal to that of the fan

144. In a thermocouple, the neutral temperature is 270°C and the temperature of inversion is 525°C. The temperature of cold junction would be

a) 30°C b) 255°C c) 15°C d) 25°C

145. 5 $ampere$ of current is passed through a metallic conductor. The charge flowing in one minute in coulomb will be

a) 5 b) 12 c) 1/12 d) 300

146. When the resistance of 9 Ω is connected at the ends of a battery, its potential difference decreases from 40 $volt$ to 30 $volt$. The internal resistance of the battery is

a) 6 Ω b) 3 Ω c) 9 Ω d) 15 Ω

147. A wire has a resistance of 6Ω. It is cut into two parts and both half values are connected in parallel. The new resistance is

a) 3Ω b) 6Ω c) 12Ω d) 1.5Ω

148. A conductor wire having 10^{29} free electrons/m^3 carries a current of 20A. If the cross-section of the wire is $1mm^2$, then the drift velocity of electrons will be

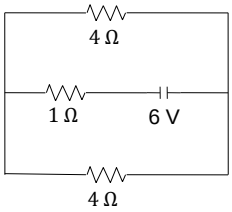
a) $6.25 \times 10^{-3} ms^{-1}$ b) $1.25 \times 10^{-5} ms^{-1}$ c) $1.25 \times 10^{-3} ms^{-1}$ d) $1.25 \times 10^{-4} ms^{-1}$

149. Above neutral temperature, thermo e.m.f. in a thermocouple

a) Decreases with rise in temperature b) Increases with rise in temperature

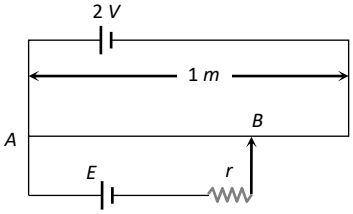
c) Remains constant d) Changes sign

150. The current in the 1Ω resistor shown in the circuit is



a) $\frac{2}{3}A$ b) 3A c) 6A d) 2A

151. In the given figure, battery E is balanced on 55 cm length of potentiometer wire but when a resistance of 10 Ω is connected in parallel with the battery then it balances on 50 cm length of the potentiometer wire then internal resistance r of the battery is



a) 1 Ω b) 3 Ω c) 10 Ω d) 5 Ω

152. Which statement is true?

(i) Kirchoff's law is equally applicable to both AC and DC.

(ii) Semiconductors have a positive temperature coefficient of resistance.

(iii) Meter bridge is greater sensitive when the resistance of all four arms of the bridge is of the same order.

(iv) The emf of a cell depends upon the size and area of electrodes.

a) (i) and (iv) b) (ii) and (iv) c) (iii) and (iv) d) None of these

153. An electric iron draws 5 amp, a TV set draws 3 amp and refrigerator graws 2 amp from a 220 $volt$ main line. The three appliances are connected in parallel. If all the three are operating at the same time, the fuse used may be of

a) 20 amp b) 5 amp c) 15 amp d) 10 amp

154. The ratio of the amounts of heat developed in the four arms of a balanced Wheatstone bridge, when the arms have resistance $P = 100\ \Omega$; $Q = 10\ \Omega$; $R = 300\ \Omega$ and $S = 30\ \Omega$ respectively is

a) 3 : 30 : 1 : 10 b) 30 : 3 : 10 :1 c) 30 : 10 : 1 : 3 d) 30 : 1 : 3 : 10

155. Length of a hollow tube is 5m, it's outer diameter is 10 cm and thickness of it's wall is 5 mm. If resistivity of the material of the tube is $1.7 \times 10^{-8}\Omega \times m$ then resistance of tube will be

a) $5.6 \times 10^{-5}\Omega$ b) $2 \times 10^{-5}\Omega$ c) $4 \times 10^{-5}\Omega$ d) None of these

156. A milliammeter of range 0-30mA has internal resistance of 20 Ω. The resistance to be connected in series to convert it into a voltmeter of maximum reading 3V is

a) 49 Ω b) 80 Ω c) 40 Ω d) 30 Ω

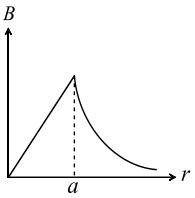
157. A lamp having tungsten filament consumes 50 W. Assume the temperature coefficient of resistance for tungsten is $4.5 \times 10^{-3}°C^{-1}$ and temperature of the surrounding is 20°C. When the lamp burns, the temperature of its filament becomes 2500°C , then the power consumed at the moment switch is on, is

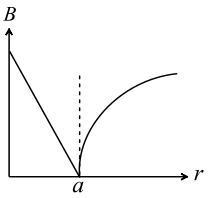
a) 608 W b) 710 W c) 215 W d) 580 W

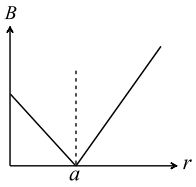
158. A heater coil cut into two equal parts and one part is connected with heater. Now heat generated in heater will be

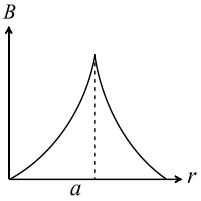
a) Twice b) Half c) One-fourth d) Four times

159. A long straight wire of a circular cross section (radius a) carries a steady current I and the current I is uniformly distributed across this cross-section. Which of the following plots represents the variation of magnitude of magnetic field B with distance r from the centre of the wire

a) 

b) 

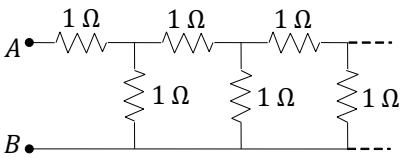
c) 

d) 

160. The resistance of a discharge tube is

a) *Ohmic* b) Non-*ohmic* c) Both (a) and (b) d) Zero

161. The equivalent resistance between points A and B of an infinite network of resistances each of 1Ω connected as shown in figure, is



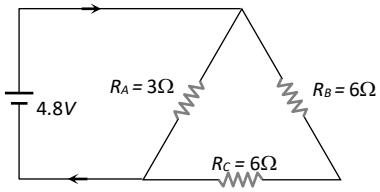
a) Infinite b) Zero c) 2Ω d) $(1+\sqrt{5})/2\Omega$

162. By mistake a voltmeter is connected in series and an ammeter is connected in parallel with a resistance in an electrical circuit. What will happen to the instrument?

a) Voltmeter is damaged b) Ammeter is damaged

c) Both are damaged d) None is damaged

163. The current in the given circuit is

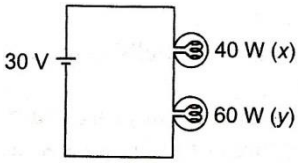


a) 8.31 A b) 6.82 A c) 4.92 A d) 2 A

164. Specific resistance of copper, constantan and silver are $1.78 \times 10^{-8}, 39.1 \times 10^{-8}$ and 10^{-8} Ω-m respectively. Which of these is the best conductor of heat and electricity?

a) Copper b) Constantan c) Silver d) All of them

165. Two bulbs X and Y having same voltage rating and of power 40 W and 60 W respectively are connected in series across a potential difference of 300 V, then



a) X will glow brighter b) Resistance of Y will be greater than X

c) Heat produced in Y will be greater than X d) Voltage drop in X will be greater than Y

166. A current passing through a copper voltmeter deposits 0.002 kg of copper on cathode plate in 100 min. If there are 10^{25} copper atoms in one kg of copper, the electric charge delivered to cathode by Cu^{++} ions per second will be

a) 0.53 C b) 0.71 C c) 1.06 C d) 10.06 C

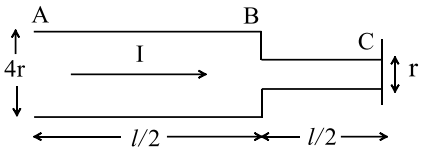
167. The resistance of an ideal ammeter is

a) Infinite b) Very high c) Small d) Zero

168. A potential difference of V is applied at the ends of a copper wire of length l and diameter d. On doubling only d, the drift velocity,

a) Becomes two times b) Becomes half c) Does not change d) Becomes one-fourth

169. Consider a cylindrical element as shown in the figure. Current flowing through element is I and resistivity of material of the cylinder is ρ. Choose the correct option out the following



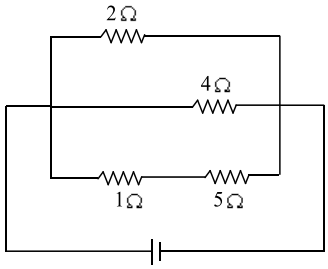
a) Power loss is second half is four times the power loss in first half

b) Voltage drop in first is twice of voltage drop in second half

c) Current density in both halves are equal

d) Electric field in both halves is equal

170. A current of 3 amp. flows through the 2Ω resistor shown in the circuit. The power dissipated in the 5Ω resistor is



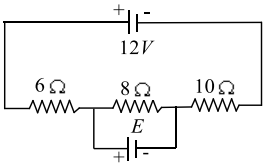
a) 1 $watt$ b) 5 $watt$ c) 4 $watt$ d) 2 $watt$

171. It is easier to start a car engine on a hot day than on a cold day. This is because the internal resistance of the car battery

a) Decreases with rise in temperature b) Increases with rise in temperature

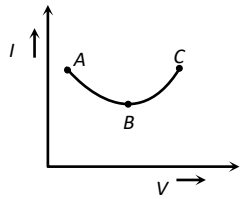
c) Decreases with a fall in temperature d) Does not change with a change in temperature

172. In the circuit shown, the current though 8 ohm is same before and after connecting E. The value of E is



a) 12 V b) 6 V c) 4 V d) 2 V

173. Resistance as shown in figure is negative at



a) A b) B c) C d) None of these

174. A thin wire of resistance 4 Ω is bent to form a circle. The resistance across any diameter is

a) 4 Ω b) 2 Ω c) 1 Ω d) 8 Ω

175. The current flowing through a wire depends on time as $I = 3t^2 + 2t + 5$. The charge flowing through the cross-section of the wire in time from $t = 0$to $t = 2$ sec. is

a) 22 C b) 20 C c) 18 C d) 5 C

176. How much work is required to carry a 6 μC charge from the negative terminal to the positive terminal of a 9 V battery

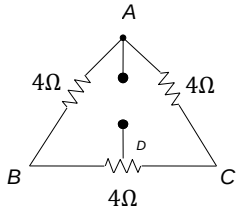
a) $54 \times 10^{-3} J$ b) $54 \times 10^{-6} J$ c) $54 \times 10^{-9} J$ d) $54 \times 10^{-12} J$

177. The direction of current in an iron-copper thermocouple is

a) From copper to iron at the hot junction b) From iron to copper at the hot junction

c) From copper to iron at cold junction d) No current will flow

178. There resistances of 4 Ω each are connected as shown in figure. If the point D divides the resistance into two equal halves, the resistance between points A and D will be



a) 12 Ω b) 6 Ω c) 3 Ω d) $\frac{1}{3}\Omega$

179. Four wires AB, BC, CD, DA of resistance 4 ohm each and a fifth wire BD of resistance 8 ohm are joined to form a rectangle $ABCD$ of which BD is a diagonal. The effective resistance between the points A and B is

a) 24 ohm b) 16 ohm c) $\frac{4}{3}$ ohm d) $\frac{8}{3}$ ohm

180. If the emf of a thermocouple, one junction of which is kept 0°C is given by $e = at + \frac{1}{2}bt^2$, then the neutral temperature will be

a) $\frac{a}{b}$ b) $-\frac{a}{b}$ c) $\frac{a}{2b}$ d) $-\frac{1}{ab}$

181. Corresponding to the resistance $4.7 \times 10^6 \Omega \pm 5\%$, which is order of colour coding on carbon resistors?

a) Yellow, violet, blue, gold b) Yellow, violet, green, gold

c) Orange, blue, green, gold d) Orange, blue, violet, gold

182. A 25 W, 220 V bulb and a 100 W, 220 V bulb are connected in parallel across a 440 V line

a) Only 100 $watt$ bulb will fuse b) Only 25 $watt$ bulb will fuse

c) Both bulbs will fuse d) None of the bulbs will fuse

183. A battery of emf 2V and internal resistance 0.1 Ω is being charged by a current of 5A. the potential difference between the terminals of the battery is

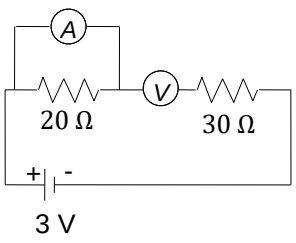
a) 2.5 Ω b) 1.5 Ω c) 0.5 Ω d) 1 Ω

184. Two identical cells send the same current in 3 Ω resistance, whether connected in series or in parallel. The internal resistance on the cell should be

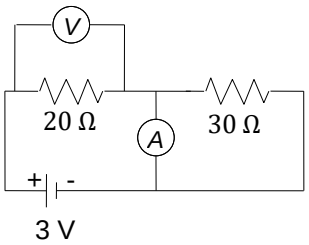
a) 1 Ω b) 3 Ω c) $\frac{1}{2}\Omega$ d) 3.5 Ω

185. Resistors of resistance 20Ωand 30Ω are joined in series with a battery of emf 3V. It is desired to measure current and voltage across the 20Ωresistor with the help of an ammeter and voltmeter. Identify the correct arrangement of ammeter (A) and voltmeter (V) out of four possible arrangements shown in figure. Given below

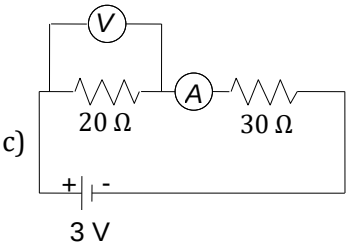
a)



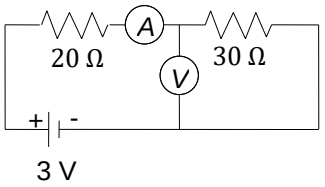
b)



c)



d)



186. For a thermocouple, the inversion temperature is 600°C and the neutral temperature is 320°C. Find the temperature of the cold junction?

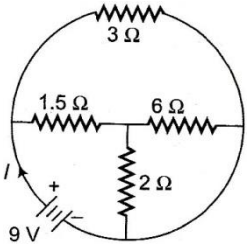
a) 40°C b) 20°C c) 80°C d) 60°C

187. Two bulbs, one of 50 *watt* and another of 25 *watt* are connected in series to the mains. The ratio of the currents through them is

a) 2 :1 b) 1 :2

c) 1 :1 d) Without voltage, cannot be calculated

188. The total current supplied to the given circuit by the battery is



a) 9 A b) 6 A c) 2 A d) 4 A

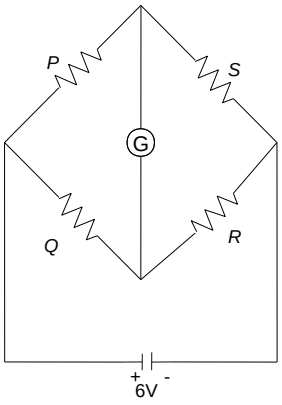
189. A resistance of 2 Ω is connected across one gap of a meter-bridge(the length of the wire is 100cm) and an unknown resistance, greater than 2 Ω is connected across the other gap. When these resistances are interchanged, the unknown resistance is

a) 3 Ω b) 2 Ω c) 4 Ω d) 6 Ω

190. A bulb rated at $(100W - 200V)$ is used on a $100V$ line. The current in the bulb is

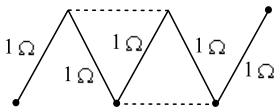
a) $\frac{1}{4} amp$ b) 4 amp c) $\frac{1}{2} amp$ d) 2 amp

191. In the Wheatstone's network given, P=10 Ω, $Q = 20\Omega$, R=15 Ω, S=30 Ω, the current passing through the battery (of negligible internal resistance) is



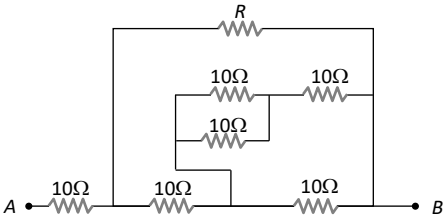
a) 0.36A b) Zero c) 0.18A d) 0.72A

192. A circuit consists of five identical conductors as shown in figure. The two similar conductors are added as indicated by the dotted lines. The ratio of resistances before and after addition will be



a) 7/5 b) 3/5 c) 5/3 d) 6/5

193. For what value of R the net resistance of the circuit will be 18 *ohms*



a) 8 Ω b) 10 Ω c) 16 Ω d) 24 Ω

194. The cold junction of a thermocouple is maintained at 10°C. No thermo *e*.m.f. is developed when the hot junction is maintained at 530°C. The neutral temperature is

a) 260°C b) 270°C c) 265°C d) 520°C

195. Two electric bulbs rated P_1watt V volts and P_2 watt V volts are connected in parallel and V volts are applied to it. The total power will be

a) $P_1 + P_2 watt$ b) $\sqrt{P_1 P_2}\ watt$ c) $\frac{P_1 P_2}{P_1 + P_2} watt$ d) $\frac{P_1 + P_2}{P_1 P_2} watt$

196. A tap supplies water at 22°C. A man takes 1 L of water per min at 37°C from the geyser. The power of the geyser is

a) 525 W b) 1050 W c) 1575 W d) 2100 W

197. Kirchoff's second law for the analysis of circuit is based on

a) Conversion of charge b) Conversion of energy
c) Conversion of both charge and energy d) Conversion of momentum of electron

198. On passing the current in water voltmeter, hydrogen

a) Is liberated at anode b) Is liberated at cathode
c) Is not liberated d) Remains in the solution

199. 62.5×10^{18} electrons per second are flowing through a wire of area of cross-section 0.1 m^2, the value of current flowing will be

a) 1 A b) 0.1 A c) 10 A d) 0.11 A

200. A certain current passing through a galvanometer produces a deflection of 100 divisions. When a shunt of one ohm is connected, the deflection reduces to 1 division. The galvanometer resistance is

a) 100 Ω b) 99 Ω c) 10 Ω d) 9.9 Ω

201. The amount of chlorine produced per-second through electrolysis in a plate which consumes 100 KW power at 200 V is (Given, electrochemical equivalent of chlorine $= 0.367 \times 10^{-3} gC^{-1}$)

a) 18.35 g b) 1.835 g c) 183.5 g d) 0.1835 g

202. The temperature of the cold junction of a thermocouple is 0°C and the temperature of the hot junction is T°C. The emf is $E = 16T - 0.04T^2\ \mu V$. The inversion temperature T_i is

a) 200°C b) 400°C c) 100°C d) 300°C

203. A resistance of 2Ω is to be made from a copper wire (specific resistance=1.7×10^{-8}Ω m)using a wire of length 50cm. The radius of the wire is

a) 0.0116mm b) 0.367 mm c) 0.116mm d) 0.267mm

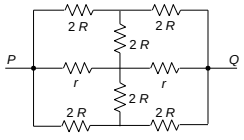
204. A 6V cell with 0.5 Ω internal resistance, a10V cell with 1 Ω internal resistance and a 12 Ω external resistance are connected in parallel. The current (in ampere) through the 10V cell is

a) 0.60 b) 2.27 c) 2.87 d) 5.14

205. Two identical cell send the same current in 2Ω resistance, whether connected in series or in parallel. The internal resistance of the cell should be

a) 1 Ω b) 2 Ω c) $\frac{1}{2}$Ω d) 2.5 Ω

206. The effective resistance between points P and Q of the electrical circuit shown in the figure.



a) $\frac{2Rr}{R+r}$ b) $\frac{8R(R+r)}{(3R+r)}$ c) $2R + 4r$ d) $\frac{5R}{2} + 2R$

207. To get a maximum current through a resistance of 2.5Ω, one can use m rows of cells each row having n cells. The internal resistance of each cell is 0.5Ω. What are the values of m and n if the total number of cells are 20?

a) $m = 2, n = 10$ b) $m = 4, n = 5$ c) $m = 5, n = 4$ d) $n = 2, m = 10$

208. Two sources of equal emf are connected to an external resistance R. The internal resistances of the two sources are R_1 and $R_2 (R_2 > R_1)$. If the potential difference across the source having internal resistance R_2 is zero, then

a) $R = R_1 R_2/(R_1 + R_2)$ b) $R = R_1 R_2/(R_2 - R_1)$

c) $R = R_2 \times (R_1 + R_2)/(R_2 - R_1)$ d) $R = R_2 - R_1$

209. In charging a battery of motor-car, the following effect of electric current is used

a) Magnetic b) Heating c) Chemical d) Induction

210. According to Faraday's law of electrolysis, the amount of decomposition is proportional to

a) 1/time for which current passes b) Electrochemical equivalent of the substance

c) 1/current d) 1/electrochemical equivalent

211. A 100 ohm galvanometer gives full scale deflection at 10 mA. How much shunt is required to read 100 mA

a) 11.11 ohm b) 9.9 ohm c) 1.1 ohm d) 4.4 ohm

212. When a resistor of 11 Ω is connected in series with an electric cell, the current flowing in it is 0.5 A. Instead, when a resistor of 5 Ω is connected to the same electric cell in series, the current increases by 0.4 A. The internal resistance of the cell is

a) 1.5 Ω b) 2 Ω c) 2.5 Ω d) 3.5 Ω

213. The steady current flows in a metallic conductor of non-uniform cross-section. The quantity/quantities constant along the length of the conductor is/are

a) Current, electric field and drift velocity b) Drift speed only

c) Current and drift speed d) Current only

214. There are 8 equal resistance R. Two are connected in parallel, such four groups are connected in series, the total resistance of the system will be

a) $R/2$ b) 2 R c) 4 R d) 8 R

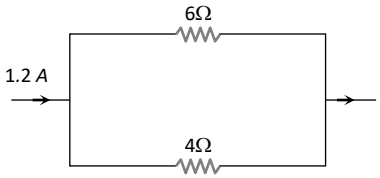
215. Two electric bulbs whose resistances are in the ratio of 1 : 2 are connected in parallel to a constant voltage source. The powers dissipated in them have the ratio

a) 1 :2 b) 1 :1 c) 2 :1 d) 1 :4

216. A voltmeter has a resistance of G ohm and range V volt. The value of resistance used in series to convert it into a voltmeter of range $_nV$ volt is

a) nG b) $\frac{G}{n}$ c) $(n-1)G$ d) $\frac{G}{n-1}$

217. In the figure given below, the current passing through 6Ω resistor is



a) 0.40 $ampere$ b) 0.48 $ampere$ c) 0.72 $ampere$ d) 0.80 $ampere$

218. A wire is broken in four equal parts. A packet is formed by keeping the four wires together. The resistance of the packet in comparison to the resistance of the wire will be

a) Equal b) One fourth c) One eight d) $\frac{1}{16} th$

219. A wire is stretched so as to change its diameter by 0.25%. The percentage change in resistance is

a) 4.0% b) 2.0% c) 1.0% d) 0.5%

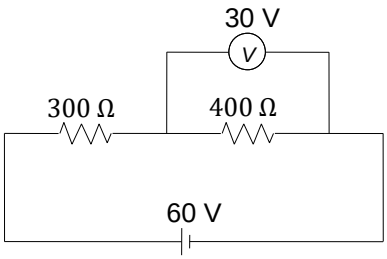
220. The junction of Ni-Cu thermo couple are maintained at 0°C and 100°C. The seebackemf developed in the temperature is

$a_{\mathrm{Ni-Cu}} = 16.3 \times 10^{-6} \mathrm{V°C^{-1}}$

$b_{\mathrm{Ni-Cu}} = -0.021 \times 10^{-6} \mathrm{V°C^{-1}}$

a) 2.73×10^{3}V b) 1.42×10^{-3}V c) 3.68×10^{-3}V d) 2.23×10^{3}V

221. In the circuit figure, the voltmeter reads 30 V. what is the resistance of the voltmeter?

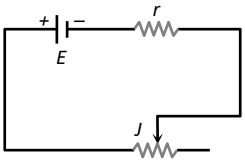


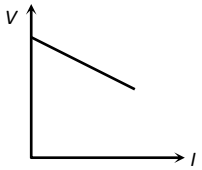
a) 1200 Ω b) 700 Ω c) 400 Ω d) 300 Ω

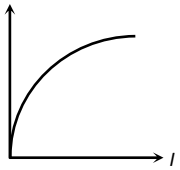
222. The lowest resistance which can be obtained by connecting 10 resistors each of $1/10$ ohm is

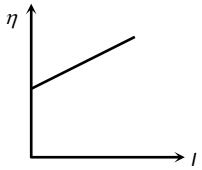
a) $1/250$ Ω b) $1/200$ Ω c) $1/100$ Ω d) $1/10$ Ω

223. Battery shown in figure has e.m.f. E and internal resistance r. Current in the circuit can be varied by sliding the contact J. If at any instant current flowing through the circuit is I, potential difference between terminals of the cell is V, thermal power generated in the cell is equal to η fraction of total electrical power generated in it.; then which of the following graphs is correct



a) 

b) 

c) 

d) Both (a) and (b) are correct

224. A heating coil is labelled 100 W, 220 V. The coil is cut in half and the two pieces are joined in parallel to the same source. The energy now liberated per second is

a) 200 J b) 400 J c) 25 J d) 50 J

225. Two bulbs are working in parallel order. Bulb A is brighter than bulb B. If R_A and R_B are their resistance respectively then

a) $R_A > R_B$ b) $R_A < R_B$ c) $R_A = R_B$ d) None of these

226. A 60 $watt$ bulb carries a current of 0.5 amp. The total charge passing through it in 1 $hour$ is

a) 3600 $coulomb$ b) 3000 $coulomb$ c) 2400 $coulomb$ d) 1800 $coulomb$

227. A student measures the terminal potential difference (V) of a cell (of emf E and internal resistance r) as a function of the current (I) flowing through it. The slope, and intercept, of the graph between V and I, then, respectively, equal

a) E and $-r$ b) $-r$ and E c) r and $-E$ d) $-E$ and r

228. The dimensions of $\frac{1}{2}\varepsilon_o E^2$ (ε_o:permittivity of free space; E: electric field) is

a) [MLT] b) $[ML^2T^{-2}]$ c) $[ML^{-1}T^{-2}]$ d) $[ML^2T^{-1}]$

229. A thermoelectric refrigerator works on

a) Joule effect b) Seeback effect c) Peltier effect d) Thermonic emission

230. A cell of internal resistance 3 ohm and emf 10 $volt$ is connected to a uniform wire of length 500 cm and resistance 3 ohm. The potential gradient in the wire is

a) 30 mV/cm b) 10 mV/cm c) 20 mV/m d) 4 mV/cm

231. A given piece of wire of length l and radius r is having a resistance R.This wire is stretched uniformly to a wire of radius $\frac{r}{2}$. What is the new resistance?

a) $3R$ b) $8R$ c) $16R$ d) $2R$

232. A wire of resistance 18Ω is divided into three equal parts. These parts are connected in side of triangle, the equivalent resistance of any two corners of triangle will be
a) 18Ω b) 9Ω c) 6Ω d) 4Ω

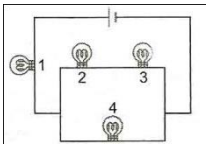
233. If an ammeter is connected in parallel to a circuit, it is likely to be damaged due to excess
a) Current b) Voltage c) Resistance d) All of these

234. When 1 kg of hydrogen forms water, 34×10^6cal of heat is liberated. If ECE of hydrogen is $(1/96500{,}000)\text{kgC}^{-1}$, then the minimum voltage requird for decomposition of water is
a) 0.75 V b) 3.0 V c) 1.5 V d) 6.0 V

235. A source of a primary cell is 2V. what is the short circuited it provides 4A current, then the internal resistance of cell will be
a) 8 Ω b) 2.0 Ω c) 4 Ω d) 0.5 Ω

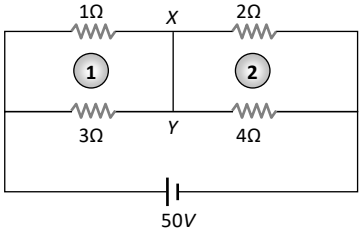
236. The current inside a copper voltameter
a) Is half the outside value
b) Is the same as the outside value
c) Is twice the outside value
d) Depends on the concentration of $CuSO_4$

237. All bulbs in figure, are identical. Which bulb lights brightly?



a) 1 b) 2 c) 3 d) 4

238. Current through wire XY of circuit shown is

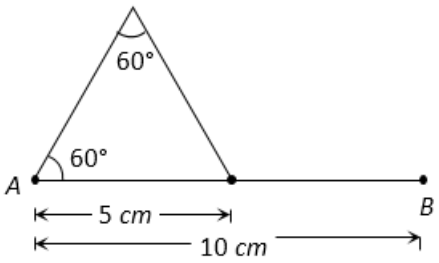


a) 1 A b) 4 A c) 2 A d) 3 A

239. A voltmeter of resistance 1000Ω gives full scale deflection when a current of 100 mA flows through it. The shunt resistance required across it to enable it to be used as an ammeter reading 1 A at full scale deflection is
a) 10000Ω b) 9000Ω c) 222Ω d) 111Ω

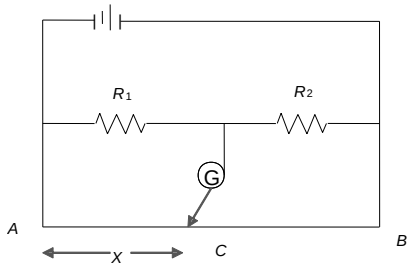
240. Two wires A and B of same material and same mass have radii $2r$ and r respectively. If resistance of wire A is 34Ω, then resistance of B will be
a) 544Ω b) 272Ω c) 68Ω d) 17Ω

241. A wire has resistance of 24 Ω is bent in the following shape. The effective resistance between A and B is



a) 24 Ω b) 10 Ω c) $\frac{16}{3}\Omega$ d) None of these

242. In the shown arrangement of the experiment of the meter bridge if AC corresponding to null deflection of galvanometer is x, what would be its value if the radius of the wire AB is doubled?



a) x b) $x/4$ c) $4x$ d) $2x$

243. A 2V battery, a 990 Ω resistor and a potentiometer of 2m length, all are connected in series of the residence of potentiometer wire is 10 Ω, then the potential gradient of the potentiometer wire is
a) $0.05Vm^{-1}$ b) $0.5Vm^{-1}$ c) $0.01Vm^{-1}$ d) $0.1\ Vm^{-1}$

244. The alloys constantan and manganin are used to make standard resistance because they have
a) Low resistivity b) High resistivity
c) Low temperature coefficient of resistance d) Both (b) and (c)

245. A constant voltage is applied between the two ends of a uniform metallic wire. Some heat is developed in it. The heat developed is doubled if
a) Both the length and radius of wire are halved b) Both the length and radius of wire are doubled
c) The radius of wire is doubled d) The length of wire is doubled

246. Two identical cells weather connected in parallel or in series gives the same current when connected to an external resistance 1.5 Ω. Find the value of internal resistance of each cell.
a) 1 Ω b) 0.5 Ω c) Zero d) 1.5 Ω

247. A capacitor of 10 μF has a potential difference of 40 V across it. If it is discharged in 0.2 s, the average current during discharge is
a) 2mA b) 4mA c) 1mA d) 0.5mA

248. Electric bulb 50 W-100 V glowing at full power are to be used in parallel with battery 120 V, 10 Ω. Maximum number of bulbs that can be connected so that they glow in full power is
a) 2 b) 8 c) 4 d) 6

249. Consider the following two statements A and B and identify the correct choice given in the answer
(A) Duddells thermo-galvanometer is suitable to measure direct current only
(B) Thermopile can measure temperature differences of the order of 10^{-3}°C
a) Both A and B are true b) Both $A$and B are false
c) A is true but B is false d) A is false but B is true

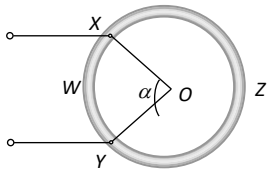
250. Two ends of a conductor are at different temperatures the electromotive force generated between two ends is
a) Seebeck electro motive force (e.m.f.) b) Peltier electro motive force (e.m.f.)
c) Thomson electro motive force (e.m.f.) d) None of these

251. A voltmeter having resistance of $50 \times 10^3\ ohm$ is used to measure the voltage in a circuit. To increase the range of measurement 3 times the additional series resistance required is
a) $10^5\ ohm$ b) $150\ k.ohm$ c) $900\ k.ohm$ d) $9 \times 10^6 ohm$

252. We have a galvanometer of resistance 25Ω. It is shunted by a 2.5 Ω wire. The part of total current that flows through the galvanometer is given as
a) $\frac{I}{I_0} = \frac{1}{11}$ b) $\frac{I}{I_0} = \frac{1}{10}$ c) $\frac{I}{I_0} = \frac{3}{11}$ d) $\frac{\mathrm{I}}{\mathrm{I}_0} = \frac{4}{11}$

253. Two different conductors have same resistance at 0°C.It is found that the resistance of the first conductor at t_1°C is equal to the resistance of the second conductor at t_2°C.The ratio of the temperature coefficients of resistance of the conductors,$\frac{\alpha_1}{\alpha_2}$ is
a) $\frac{t_1}{t_2}$ b) $\frac{t_2 - t_1}{t_2}$ c) $\frac{t_2 - t_1}{t_1}$ d) $\frac{t_2}{t_1}$

254. A wire of resistor R is bent into a circular ring of radius r. Equivalent resistance between two points X and Y on its circumference, when angle XOY is α, can be given by



a) $\frac{R\alpha}{4\pi^2}(2\pi-\alpha)$ b) $\frac{R}{2\pi}(2\pi-\alpha)$ c) $R(2\pi-\alpha)$ d) $\frac{4\pi}{R\alpha}(2\pi-\alpha)$

255. One junction of a certain thermo-couple is at a fixed temperature T_r and the other junction is at temperature T. The thermo electric force for this is expressed by
$E = K(T-T_r)[\,T_0 + \frac{1}{2}(T^2+T_r^2)\,]$.
At temperature $T = T_0/2$ the thermoelectric power is
a) $\frac{1}{2}K\,T_0$ b) $\frac{3}{2}K\,T_0$ c) $\frac{1}{2}K\,T_0^2$ d) $\frac{1}{2}K\,(T_0-T_r)^2$

256. A silver and a zinc voltmeter are connected in series and a current I is passed through them for a time t, liberating w gram of zinc. The weight of silver deposited is nearly
a) 1.7 w g b) 2.4 w g c) 3.5 w**g** d) 1.2 w g

257. When current is passed in antimony-bismuth couple, then
a) The junction becomes hot when the current is from bismuth to antimony
b) The junction becomes hot when current flows from antimony to bismuth
c) Both junctions becomes hot
d) Both junctions becomes cold

258. A galvanometer of resistance 50 Ω is connected to a battery of 3V along with a resistance of 2950 Ω in series. A full scale deflection of 30 divisions is obtained in the galvanometer. In order to reduce this deflection to 20 divisions, the resistance in series should be
a) 5050 Ω b) 5550 Ω c) 6050 Ω d) 4450 Ω

259. A moving coil galvanometer has a resistance of 10Ω and full scale deflection of 0.01A. It can be converted into voltmeter of 10V full scale by connecting into resistance of
a) 9.90Ω is series b) 10Ω in series c) 990Ω in series d) 0.10Ω in series

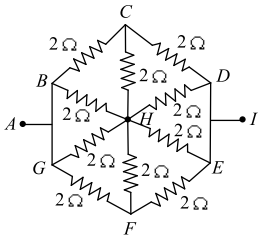
260. When a current is passed through water, acidified with a dilute sulphuric acid, the gases formed at the platinum electrodes are
a) 1 vol. hydrogen (cathode) and 2 vol. oxygen (anode)
b) 2 vol. hydrogen (cathode) and 1 vol. oxygen (anode)
c) 1 vol. hydrogen (cathode) and 1 vol. oxygen (anode)
d) 1 vol. oxygen (cathode) and 2 vol. hydrogen (anode)

261. 12 cells each having same emf are connected in series with some cells wrongly connected. The arrangement is connected in series with an ammeter and two cells which are in series. Current is 3 A when cells and battery aid each other and is 2 A when cells and battery oppose each other. The number of cells wrongly connected is
a) 4 b) 1 c) 3 d) 2

262. Equal amounts of a metal are converted into cylindrical wire of different lengths L and cross-sectional area A.The wire with the maximum resistance is the one, which has
a) Length=L and area = A
b) lengths = $\frac{L}{2}$ and area = $2A$
c) lengths = $2L$ and area = $\frac{A}{2}$
d) All have the same resistance, as the amount of the metal is the same

263. If θ_i is the inversion temperature, θ_n is the natural temperature, θ_c is the temperature of the cold junction then
a) $\theta_i + \theta_c = \theta_n$ b) $\theta_i - \theta_c = 2\theta_n$ c) $\frac{\theta_i+\theta_c}{2} = \theta_n$ d) $\theta_c - \theta_i = 2\theta_n$

264. The effective resistance across the points A and I is



a) 2 Ω b) 1 Ω c) 0.5 Ω d) 5 Ω

265. If 2 A of current is passed through $CuSO_4$ solution for 32 s, then the number of copper ions deposited at the cathode will be

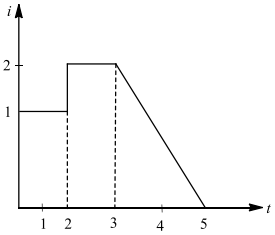
a) 4×10^{20} b) 2×10^{20} c) 4×10^{19} d) 2×10^{19}

266. A current of 1 mA is flowing through a copper wire. How many electrons will pass a given point in one $second$

$[e = 1.6 \times 10^{-19} Coulomb]$

a) 6.25×10^{19} b) 6.25×10^{15} c) 6.25×10^{31} d) 6.25×10^{8}

267. The plot represents the flow of current through a wire at three different times.



The ratio of charges flowing through the wire at different times is

a) 2 : 1 : 2 b) 1 : 3 : 3 c) 1 : 1 : 1 d) 2 : 3 : 4

268. The internal resistance of a cell of emf 2 V is 0.1Ω.It is connected to a resistance of 3.9Ω. The potential difference across is

a) 0.5V b) 1.9V c) 1.95V d) 2V

269. The emf of a battery is 2 V and its internal resistance is 0.5 Ω. The maximum power which it can deliver to any external circuit will be

a) 8 $Watt$ b) 4 $Watt$ c) 2 $Watt$ d) None of the above

270. An AC generator of 220 V have internal resistance $r = 10$ Ω and external resistance $R = 100$ Ω. What is the power developed in the external circuit?

a) 227 W b) 325 W c) 400 W d) 500 W

271. Two resistances when connected in parallel across a cell of negligible internal resistance consume 4 times the power they would consume when connected in series. If one resistance is 5Ω , the other is

a) 1 Ω b) 2.5 Ω c) 5 Ω d) 10 Ω

272. A 36Ω galvanometer is shunted by resistance of 4Ω. The percentage of the total current, which passes through the galvanometer is

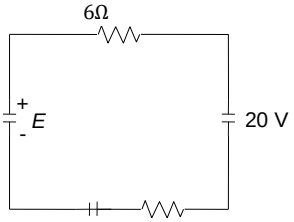
a) 8% b) 9% c) 10% d) 91%

273. What will happen when a 40 $watt$, 220 $volt$ lamp and 100 $watt$, 220 $volt$ lamp are connected in series across 40 $volt$ supply

a) 100 $watt$ lamp will fuse b) 40 $watt$ lamp will fuse

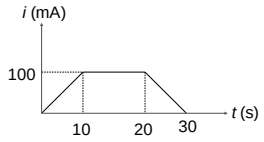
c) Both lamps will fuse d) Neither lamp will fuse

274. Calculate the value E, for given circuit, when value of 2A current is either flowing in clockwise or anticlockwise direction



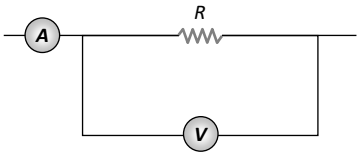
a) 32 V, 8V b) 38V, 2V c) 32V, 2V d) 30V, 8V

275. In a copper voltmeter, the mass deposited in 30 s is m gram. If the current-time graph is as shown in figure, the electrochemical equivalent of copper, in gC^{-1} is



a) 0.1 m b) 0.6 m c) $\frac{m}{2}$ d) m

276. The ammeter A reads 2 A and the voltmeter V reads 20 V. The value of resistance R is (Assuming finite resistance's of ammeter and voltmeter)

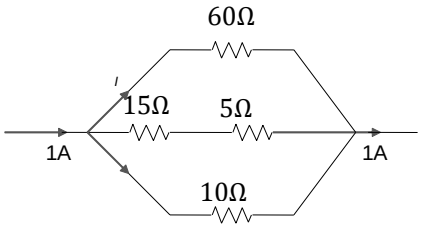


a) Exactly 10 ohm b) Less than 10 ohm
c) More than 10 ohm d) We cannot definitely say

277. An electric kettle takes 4 A current at 220 V. How much time will it take to boil 1 kg of water from room temperature 20°C? The temperature of boiling water is 100°C

a) 0.63 $minutes$ b) 6.3 $minutes$ c) 12.6 $minutes$ d) 12.8 $minutes$

278. The magnitude of I in ampere is



a) 0.1 b) 0.3 c) 0.6 d) None of the above

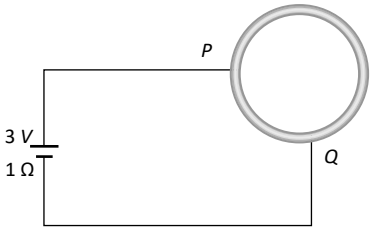
279. Two electric bulbs marked 40 W, 220 V and 60 W, 220 V when connected in series, across same voltage supply of 220 V, the effective power is P_1 and when connected in parallel the effective power is P_2. Then $\frac{P_1}{P_2}$ is

a) 0.5 b) 0.48 c) 0.24 d) 0.16

280. To convert a 800 mV range $milli\ voltmeter$ of resistance 40 Ω into a galvanometer of 100 mA range, the resistance to be connected as shunt is

a) 10 Ω b) 20 Ω c) 30 Ω d) 40 Ω

281. A wire of resistance 10 Ω is bent to form a circle. P and Q are points on the circumference of the circle dividing it into a quadrant and are connected to a battery of 3 V and internal resistance 1 Ω as shown in the figure. The currents in the two parts of the circle are



a) $\frac{6}{23}A$ and $\frac{18}{23}A$ b) $\frac{5}{26}A$ and $\frac{15}{26}A$ c) $\frac{4}{25}A$ and $\frac{12}{25}A$ d) $\frac{3}{25}A$ and $\frac{9}{25}A$

282. The temperature at which thermo emf is zero, is

a) Temperature of inversion b) Temperature of cold junction
c) Neutral temperature d) None of the above

283. n identical bulbs, each designed to draw a power p from a certain voltage supply, are joined in series

across that supply. The total power which they will draw is

a) p/n^2 b) p/n c) p d) np

284. The thermistors are usually made of

a) Metals with low temperature coefficient of resistivity

b) Metals with high temperature coefficient of resistivity

c) Metal oxides with high temperature coefficient of resistivity

d) Semiconducting materials having low temperature coefficient of resistivity

285. In above question, if length is doubled, the drift velocity

a) Is doubled b) Is halved c) Remains same d) Becomes zero

286. We have two wires A and B of same mass and same material. The diameter of the wire A is half of that B. If the resistance of wire A is 24 ohm then the resistance of wire B will be

a) 12 Ohm b) 3.0 Ohm c) 1.5 Ohm d) None of the above

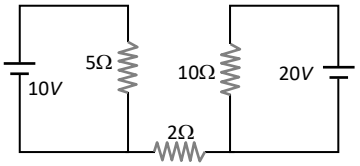
287. When a copper voltmeter is connected with a battery of emf 12V, 2 g of copper is deposited in 30 min. If the same voltmeter is connected across 6 V battery, the mass of copper deposited in 45 min would be

a) 1 g b) 1.5 g c) 2 g d) 2.5 g

288. Which of the following is not reversible

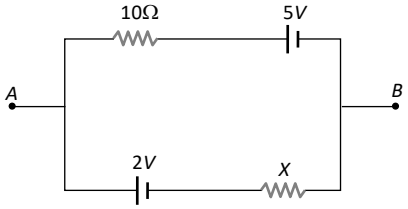
a) Joule effect b) Peltier effect c) Seebeck effect d) Thomson effect

289. Find out the value of current through 2Ω resistance for the given circuit



a) 5 A b) 2 A c) Zero d) 4 A

290. If $V_{AB} = 4V$ in the given figure, then resistance X will be



a) 5 Ω b) 10 Ω c) 15 Ω d) 20 Ω

291. As the temperature rises the resistance offered by metal

a) Increase b) Decrease c) Remains same d) None of these

292. A uniform wire has resistance 24 Ω. It is bent in the form of a circle. The effective resistance between the two end points on any diameter of the circle is

a) 6 Ω b) 12 Ω c) 3 Ω d) 24 Ω

293. When the length and area of cross-section both are doubled, then its resistance

a) Will become half b) Will be doubled

c) Will remain the same d) Will become four times

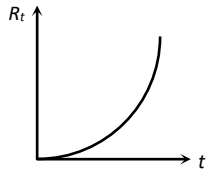
294. When a current passes through a wire whose different parts are maintained at different temperatures, evolution or absorption of heat all along the length of wire is known as

a) Joule effect b) Seebeck effect c) Peltier effect d) Thomson effect

295. The drift velocity of free electrons in a conductor is 'v' when a current 'i' is flowing in it. If both the radius and current are doubled, then drift velocity will be

a) v b) $\frac{v}{2}$ c) $\frac{v}{4}$ d) $\frac{v}{8}$

296. The resistance R_t of a conductor varies with temperature t as shown in the figure. If the variation is represented by $R_t = R_0[1 + \alpha t + \beta t^2]$, then

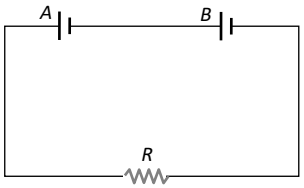


a) α and β are both negative
b) α and β are both positive
c) $\alpha$is positive and β is negative
d) α is negative and β are positive

297. A 50 ohm galvanometer gets full scale deflection when a current of 0.01 A passes through the coil. When it is converted to a 10 A ammeter, the shunt resistance is
a) 0.01 Ω
b) 0.05 Ω
c) 2000 Ω
d) 5000 Ω

298. An expression for rate of heat generated, if a current of I ampere flows through a resistance of R Ω, is
a) I^2Rt
b) I^2R
c) V^2R
d) $I\ R$

299. Two batteries A and B each of e.m.f. 2 V are connected in series to an external resistance $R = 1\ ohm$. If the internal resistance of battery A is 1.9 ohm and that of B is 0.9 ohm, what is the potential difference between the terminals of battery A



a) 2 V
b) 3.8 V
c) Zero
d) None of the above

300. A copper wire of resistance R is cut into ten parts of equal length. Two pieces each are joined in series and then five such combinations are joined in parallel. The new combination will have a resistance
a) R
b) $\frac{R}{4}$
c) $\frac{R}{5}$
d) $\frac{R}{25}$

301. There are three resistance coils of equal resistance. The maximum number of resistances you can obtain by connecting them in any manner you choose, being free to use any number of the coils in any way is
a) 3
b) 4
c) 6
d) 5

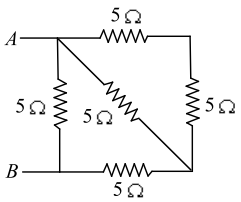
302. The resistance of a conductor increases with
a) Increase in length
b) Increase in temperature
c) Decrease in cross-sectional area
d) All of these

303. A 50V battery is connected across a 10 Ω resistor and a current of 4.5 A flows. The internal resistance of the battery is
a) 10 Ω
b) 0.5 Ω
c) 1.1 Ω
d) 5 Ω

304. A galvanometer of resistance 22.8 Ω measures 1A. How much shunt should be used, so that it can be used to measure 20A?
a) 1Ω
b) 2Ω
c) 1.2Ω
d) 2.2Ω

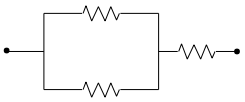
305. To get the maximum current from a parallel combination of n identical cells each of internal resistance r and external resistance R, when
a) $R \gg r$
b) $R \ll r$
c) $R = r$
d) None of these

306. The equivalent resistance between the points A and B in the following circuit is



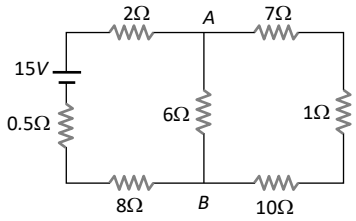
a) 3.12 Ω
b) 1.56 Ω
c) 6.24 Ω
d) 12.48 Ω

307. Three equal resistors are connected as shown in figure. The maximum power consumed by each resistor is 18 W. Then maximum power consumed by the combination is



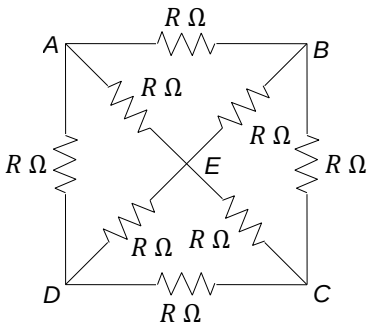
a) 18 W b) 27 W c) 36 W d) 54 W

308. The current from the battery in circuit diagram shown is



a) 1 A b) 2 A c) 1.5 A d) 3 A

309. The resistance between the points A and C in the figure below is



a) $R\ \Omega$ b) $\frac{4}{3}\ \Omega$ c) $\frac{2}{3}\ R\Omega$ d) $\frac{8R}{3}$

310. In an electroplating experiment, $m\ gm$ of silver is deposited when 4 $ampere$ of current flows for 2 $minute$. The amount (in gm) of silver deposited by 6 $ampere$ of current for 40 $second$ will be

a) $4\ m$ b) $m/2$ c) $m/4$ d) $2\ m$

311. For which of the following the resistance decreases on increasing the temperature

a) Copper b) Tungsten c) Germanium d) Aluminium

312. When a 12Ω resistor is connected with a moving coil galvanometer then its deflection reduces from 50 divisions to 10 divisions. The resistance of the galvanometer is

a) 24 Ω b) 36 Ω c) 48 Ω d) 60 Ω

313. Current flows through a metabolic conductor whose area of cross-section increases in the direction of the current. If we move in this direction,

a) The carrier density will change b) The current will change
c) The drift velocity will decrease d) The drift velocity will increase

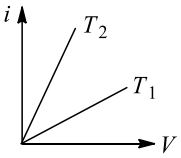
314. The resistance of a metal increases with increasing temperature because

a) The collisions of the conducting electrons with the electrons increase
b) The collisions of the conducting electrons with the lattice consisting of the ions of the metal increases
c) The number of conduction electrons decrease
d) The number of conduction electrons increase

315. A4_{μ} F conductor is charged to 400 V and then its plates are joined through a resistance of 1 kΩ. The heat produced in the resistance is

a) 0.18 J b) 0.21 J c) 0.25 J d) 0.32 J

316. The current i and voltage V graphs for a given metallic wire at two different temperatures T_1 and T_2 are shown in the figure. It is concluded that



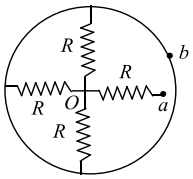
a) $T_1 > T_2$ b) $T_1 < T_2$ c) $T_1 = T_2$ d) $T_1 = 2T_1$

317. Three electric bulbs with same voltage ratings of 110 volts but wattage ratings of 40, 60 and 100 watts respectively are connected in series across a 220 volt supply line. If their brightness are B_1, B_2, B_3 respectively, then
a) $B_1 > B_2 > B_3$
b) $B_1 > B_2 < B_3$
c) $B_1 = B_2 = B_3$
d) Bulbs will burn out due to the high voltage supply

318. The electric intensity E, current density j and specific resistance k are related to each other by the relation
a) $E = j/k$ b) $E = jk$ c) $E = k/j$ d) $k = jE$

319. The same mass of copper is drawn into two wires 1 mm and 2 mm thick. Two wires are connected in series and current is passed through them. Heat produced in the wire is in the ratio
a) 2 :1 b) 1 :16 c) 4 :1 d) 16 :1

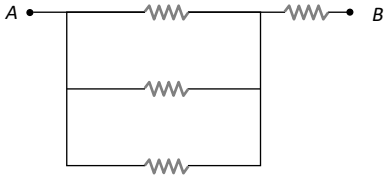
320. The equivalent resistance between points a and b of a network shown in the figure is given by



a) $\frac{3}{4}R$ b) $\frac{4}{3}R$ c) $\frac{5}{4}R$ d) $\frac{4}{5}R$

321. Resistance in the two gaps of a $meter$ bridge are 10 ohm and 30 ohm respectively. If the resistances are interchanged the balance point shifts by
a) 33.3 cm b) 66.67 cm c) 25 cm d) 50 cm

322. If all the resistors shown have the value 2 ohm each, the equivalent resistance over AB is



a) 2 ohm b) 4 ohm c) $1\frac{2}{3}$ ohm d) $2\frac{2}{3}$ ohm

323. An electric bulb rated 220 V, 100 W is connected in series with another bulb rated 220 V, 60 W. If the voltage across the combination is 220 V, the power consumed by the 100 Wbulb will be about
a) 25 W b) 14 W c) 60 W d) 100 W

324. Potentiometer wire of length 1m is connected in series with 490Ωresistance and 2V battery. If 0.2m $Vcm^{-1}$is the potential gradient, then resistance of the potentiometer wire is
a) 4.9Ω b) 7.9Ω c) 5.9Ω d) 6.9Ω

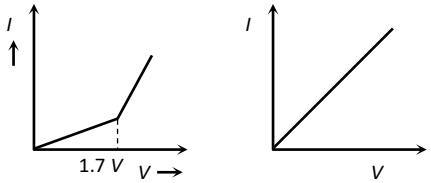
325. A conductor wire having 10^{29} free electrons/m^3 carries a current of 20A. If the cross-section of the wire is $1mm^2$, then the drift velocity of electrons will be
a) $6.25 \times 10^{-3} ms^{-1}$ b) $1.25 \times 10^{-5} ms^{-1}$ c) $1.25 \times 10^{-3} ms^{-1}$ d) $1.25 \times 10^{-4} ms^{-1}$

326. A metallic wire of resistance 12 Ω is bent to from a square. The resistance between two diagonal points would be
a) 12 Ω b) 24 Ω c) 6 Ω d) 3 Ω

327. The material of fuse wire should have
a) A high specific resistance and high melting point
b) A low specific resistance and low melting point
c) A high specific resistance and low melting point
d) A low specific resistance and a high melting point

328. An electric lamp is marked 60 W, 230 V. The cost of a 1 kWh of energy is $Rs.$ 1.25. The cost of using this lamp 8 hrs a day for 30 days is
a) $Rs.$ 10 b) $Rs.$ 16 c) $Rs.$ 18 d) $Rs.$ 20

329. The V-i graphs A and B are drawn for two voltameters. Identify each graph

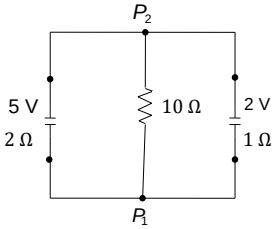


a) A for water voltameter and B for Cuvoltameter
b) A forCuvoltmeter and B for water voltameter
c) Both A and B represents Cu voltameter
d) None of these

330. The resistance of a wire is 10Ω. Its length is increased by 10% by stretching. The new resistance will now be
a) 12Ω b) 1.2Ω c) 13Ω d) 11Ω

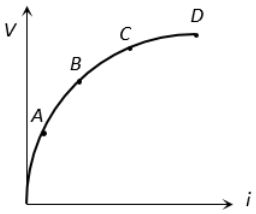
331. If $t_1$and t_2 are the times taken by two different coils for producing same heat with same supply, then the time taken by them to produce the same heat when connected in parallel will be
a) $t_1 + t_2$ b) $\frac{t_1 t_2}{t_1 + t_2}$ c) $\frac{2t_1 t_2}{t_1 + t_2}$ d) $t_1 t_2$

332. A 5V battery with internal resistance 2 Ω and a 2V battery with internal resistance 1 Ω are connected to a 10 Ω resistor as shown in the figure



The current in the 10 Ω resistor is
a) 0.27A, $P_2 to P_1$ b) 0.03A, $P_1 to P_2$ c) 0.03A, $P_2 tp P_1$ d) 0.27A, $P_1 to P_2$

333. Variation of current passing through a conductor as the voltage applied across its ends is varied as shown in the adjoining diagram. If the resistance (R) is determined at the points A, B, C and D, we will find that



a) $R_C = R_D$ b) $R_B > R_A$ c) $R_C > R_B$ d) None of these

334. Two resistances R and $2R$ are connected in parallel in an electric circuit. The thermal energy developed in R and $2R$ are in the ratio
a) 1 : 2 b) 2 : 1 c) 1 : 4 d) 4 : 1

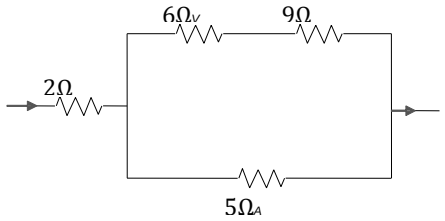
335. An electric bulb is rated 220 V – 100 W. The power consumed by it when operated on 110 V will be
a) 75 W b) 40 W c) 25 W d) 50 W

336. Dimensions of a block are $1\ cm \times 1\ cm \times 100 cm$. If specific resistance of its material is $3 \times 10^{-7} ohm - m$, then the resistance between the opposite rectangular faces is
a) $3 \times 10^{-9} ohm$ b) $3 \times 10^{-7} ohm$ c) $3 \times 10^{-5} ohm$ d) $3 \times 10^{-3} ohm$

337. A copper and silver voltmeter are connected in parallel. If 2000 C of charge liberates the same mass of copper and silver, then charge flowing in copper voltmeter is
$[\mathrm{Z(Cu} = 3.36 \times 10^{-7}\ \mathrm{kg\ C^{-1}}, \mathrm{Z(Ag)} = 1.008 \times 10^{-6} \mathrm{kgC^{-1}}]$
a) 1250 C b) 1500 C c) 1750 C d) 1000 C

338. Two wires of the same material but of different diameters carry the same current$i$. If ratio of their diameters is 1:2, then the corresponding ratio of their mean drift velocities will be
a) 4: 1 b) 1: 1 c) 1: 2 d) 1: 4

339. In the circuit shown, if the resistance 5 Ω develops a heat of 42 J per second, heat developed in 2 Ω must be about (in Js^{-1})



a) 25 b) 20 c) 30 d) 35

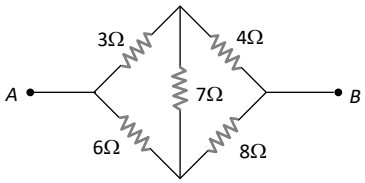
340. The net resistance of a voltmeter should be large to ensure that
a) It does not get overheated
b) It does not draw excessive current
c) It can measure large potential difference
d) It does not appreciably change the potential difference to be measured

341. Five cells each of internal resistances 0.2Ω and emf 2 V are connected in series with a resistance of 4Ω. The current through the external resistance is
a) 4A b) 2A c) 1A d) 0.5A

342. The maximum current that flows through a fuse wire before it blows out varies with its radius as
a) $r^{3/2}$ b) r c) $r^{2/3}$ d) $r^{1/2}$

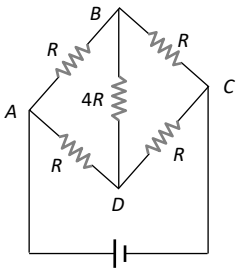
343. If the cold junction is held at 0°C, the same thermo-emf V of a thermocouple varies as $V = 10 \times 10^{-6}\, t - \frac{1}{40} \times 10^{-6} t^2$, where t is the temperature of the hot junction in °C. The neutral temperature and the maximum value of thermo-emf are respectively
a) 200°C; 2 mV b) 400°C; 2 mV c) 100°C; 1 mV d) 200°C; 1 mV

344. In the given figure, equivalent resistance between A and B will be



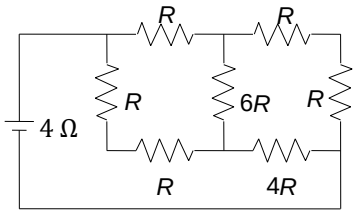
a) $\frac{14}{3}\Omega$ b) $\frac{3}{14}\Omega$ c) $\frac{9}{14}\Omega$ d) $\frac{14}{9}\Omega$

345. Five resistors of given values are connected together as shown in the figure. The current in the arm BD will be



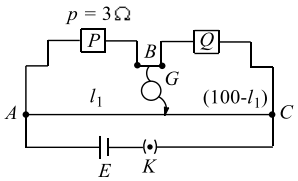
a) Half the current in the arm ABC b) Zero
c) Twice the current in the arm ABC d) Four times the current in the arm ABC

346. A battery of internal resistance 4 Ω is connected to the network of resistance as shown. In order to given the maximum power to the network, the value of R (in Ω) should be



a) 4/9 b) 8/9 c) 2 d) 18

347. In a metre bridge experiment, resistances are connected as shown in figure. The balancing length l_1 is 55 cm. Now an unknown resistance x is connected in series with P and the new balancing length is found to be 75 cm. The value of x is



a) $\frac{54}{12}\Omega$ b) $\frac{20}{11}\Omega$ c) $\frac{48}{11}\Omega$ d) $\frac{11}{48}\Omega$

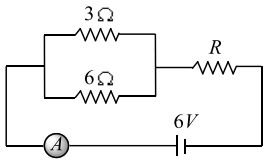
348. To deposit one litre of hydrogen at 22.4 atmosphere from acidulated water, the quantity of electricity that must pass through is

a) 1 $coulomb$ b) 22.4 $coulomb$ c) 96500 $coulomb$ d) 193000 $coulomb$

349. Out of five resistances of resistance $R\ \Omega$ each 3 are connected in parallel and are joined to the rest 2 in series. Find the resultant resistance

a) $\left(\frac{3}{7}\right)R\ \Omega$ b) $\left(\frac{7}{3}\right)R\ \Omega$ c) $\left(\frac{7}{8}\right)R\ \Omega$ d) $\left(\frac{8}{7}\right)R\ \Omega$

350. If the ammeter in the given circuit reads 2 A, the resistance R is



a) 1 ohm b) 2 ohm c) 3 ohm d) 4 ohm

351. An electric bulb of 100 $watt$ is connected to a supply of electricity of 220 V. Resistance of the filament is

a) 484 Ω b) 100 Ω c) 22000 Ω d) 242 Ω

352. The emf of a thermocouple, cold junction of which is kept at -300°C is given by $E = 40t + \frac{1}{10}t^2$. The temperature of inversion of thermocouple will be

a) 200°C b) 400°C c) -200°C d) -100°C

353. An aluminium (Al) rod with area of cross-section $4 \times 10^{-6}\text{m}^2$ has a current of 5 A flowing through it. Find the drift velocity of electron in the rod. Density of Al= $2.7 \times 10^3\text{kgm}^{-3}$ and atomic wt.=27u. Assume that each Al atom provides one electron.

a) $8.6 \times 10^{-4}\text{ms}^{-1}$ b) $1.3 \times 10^{-4}\text{ms}^{-1}$ c) $2.8 \times 10^{-2}\text{ms}^{-1}$ d) $3.8 \times 10^{-3}\text{ms}^{-1}$

354. Which of the following is not a correct statement

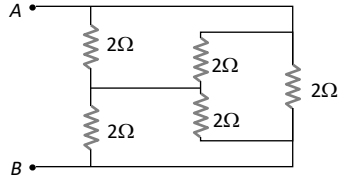
a) Resistivity of electrolytes decreases on increasing temperature

b) Resistance of mercury falls on decreasing its temperature

c) When joined in series a 40 W bulb glows more than a 60 W bulb

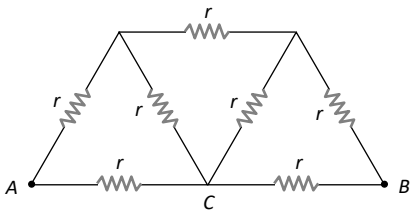
d) Resistance of 40 W bulb is less than the resistance of 60 W bulb

355. Find the equivalent resistance across AB



a) 1 Ω b) 2 Ω c) 3 Ω d) 4 Ω

356. In the circuit shown, the value of each resistance is r, then equivalent resistance of circuit between points A and B will be



a) $(4/3)r$ b) $3r/2$ c) $r/3$ d) $8r/7$

357. Some electric bulbs are connected in series across a 220V supply in a room. If one bulb is fused, then remaining bulbs are connected again in series across the same supply. The illumination in the room will be

a) Increase b) Decrease c) Remain the same d) Not continuous

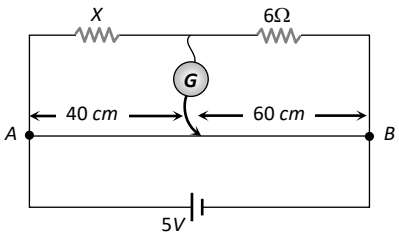
358. A galvanometer coil has a resistance of 15 Ω and gives full scale deflection for a current of 4mA. To convert it to an ammeter of range 0 to 6A

a) 10 m Ω resistance is to be connected in parallel to the galvanometer
b) 10 m Ω resistance is to be connected in series with the galvanometer
c) 0.1 Ω resistance is to be connected in parallel to the galvanometer
d) 0.1 Ω resistance is to be connected in series with the galvanometer

359. Sensitivity of potentiometer can be increased by

a) Increasing the e.m.f. of the cell
b) Increasing the length of the potentiometer wire
c) Decreasing the length of the potentiometer wire
d) None of the above

360. In the circuit shown, a *meter* bridge is in its balanced state. The *meter* bridge wire has a resistance 0.1 ohm/cm. The value of unknown resistance X and the current drawn from the battery of negligible resistance is



a) 6 Ω, 5 amp b) 10 Ω, 0.1 amp c) 4 Ω, 1.0 amp d) 12 Ω, 0.5 amp

361. A metallic resistor is connected across a battery. If the number of collisions of the free electrons with the lattice is some how decreased in the resistor (for example by cooling it), the current will

a) Remains constant b) Increase c) Decrease d) Become zero

362. A 10 m long wire of 20Ω resistance is connected with a battery of 3 $volt$e.m.f. (negligible internal resistance) and a 10 Ω resistance is joined to it is series. Potential gradient along wire in volt per meter is

a) 0.02 b) 0.3 c) 0.2 d) 1.3

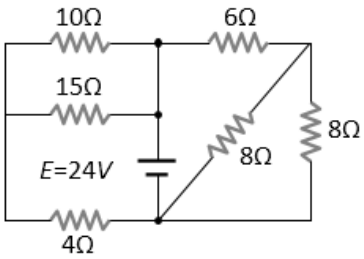
363. Resistances R_1 and R_2 are joined in parallel and a current is passed so that the amount of heat liberated is H_1 and H_2 respectively. The ratio $\frac{H_1}{H_2}$ has the value

a) $\frac{R_2}{R_1}$ b) $\frac{R_1}{R_2}$ c) $\frac{R_1^2}{R_2^2}$ d) $\frac{R_2^2}{R_1^2}$

364. The $V-i$ graph for a good conductor makes angle 40° with V −axis. Here V denotes voltage and i denotes current. The resistance of the conductor will be

a) sin 40° b) cos 40° c) tan 40° d) cot 40°

365. Find the equivalent resistance across the terminals of source of e.m.f. 24 V for the circuit shown in figure



a) 15 Ω b) 10 Ω c) 5 Ω d) 4 Ω

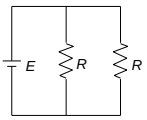
366. Three resistances of 4Ω, 6Ωand 12Ω are connected in parallel and the combination is connected in series with 4 V battery with internal resistance of 2 Ω. The battery current is

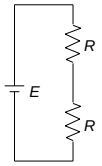
a) 1A b) 10A c) 2A d) 0.5A

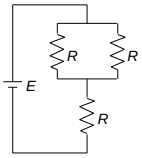
367. The negative Zn pole of Daniell cell, sending a constant current through a circuit, decreases in mass by 0.13 g in 30 min. If the electrochemical equivalent of Zn and Cu are 32.5 and 31.5 respectively, the increase in the mass of the positive Cu pole in this time is

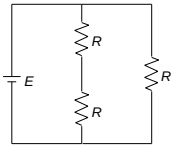
a) 0.180 g b) 0.141 g c) 0.126 g d) 0.242 g

368. Consider four circuits shown in figure. In which circuit power dissipated is greatest. (Neglect the internal resistance of the power supply)

a) 

b) 

c) 

d) 

369. For a certain thermocouple the emfis $E = aT + bT^2$, where t (in°C) is the temperature of hot junction, the cold junction is at 0°C. The value of contants a and b are 10×10^{-6} and 0.02×10^{-6} respectively, then the temperature of inversion (in°C) will be

a) 150 b) 250 c) 500 d) 750

370. The temperature coefficient of resistance for a wire is $0.00125°\ C^{-1}$.At 300 K its resistance is 1Ω.The temperature at which the resistance becomes 1.5Ωis?

a) 450K b) 727K c) 454K d) 900K

371. A source of emf E=15V and having negligible internal resistance, is connected to a variable resistance, so that the current in the circuit increases with time as I=1.2t+3. Then, the total charge that will flow in first 5s will be

a) 10C b) 20C c) 30C d) 40C

372. A current of 0.01mA passes through the potentiometer wire of a resistivity of 10^9Ω-cm and area of cross-section $10^{-2}cm^2$. The potential gradient is

a) $10^9 Vm^{-1}$ b) $10^{11} Vm^{-1}$ c) $10^{10} Vm^{-1}$ d) $10^8 Vm^{-1}$

373. A wire of a certain material is stretched slowly by ten percent. Its new resistance and specific resistance become respectively

a) Both remain the same b) 1.1 times, 1.1 times c) 1.2 times , 1.1 times d) 1.21 times, same

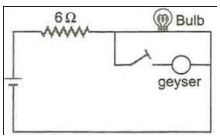
374. An ammeter reads upto 1A. Its internal resistance is 0.81Ω. To increase the range to 10A the value of the required shunt is

a) 0.03Ω b) 0.3Ω c) 0.9Ω d) 0.09Ω

375. The electron in a hydrogen atom circles around the proton in 1.5941×10^{-18}s. The equivalent current due to motion of the electrons is

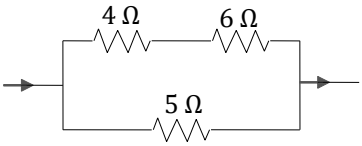
a) 127.37 mA b) 122.49 mA c) 100.37 mA d) 94.037 mA

376. The wiring of a house has resistance 6Ω. A 100 W bulb is glowing as shown in figure. If a geyser of 1000 W is switched on, the change in potential drop across the bulb is nearly



a) Nil b) 12 V c) 24 V d) 32 V

377. In the circuit shown, the heat produced in the 5Ω resistor due to current flowing in it is 10 cal $-$ s^{-1}. The heat generated in Ω resistor is



a) 1 cal $-$ s^{-1} b) 2 cal $-$ s^{-1} c) 3 cal $-$ s^{-1} d) 4 cal $-$ s^{-1}

378. The relation between Faraday constant (F), chemical equivalent (E) and electrochemical equivalent (Z) is

a) $F = EZ$ b) $F = \frac{Z}{E}$ c) $F = \frac{E}{Z}$ d) $F = \frac{E}{Z^2}$

379. You are given several identical resistances each of value $R = 10\Omega$ and each capable of carrying maximum current of 1 ampere. It is required to make a suitable combination of these resistances to produce a resistance of 5Ω which can carry a current of 4 ampere. The minimum number of resistances of the type R that will be required for this job

a) 4 b) 10 c) 8 d) 20

380. Three electric bulbs of rating $60W$ each are joined in series and then connected to electric mains. The power consumed by these three bulbs will be

a) 180 W b) 60 W c) 20 W d) $\frac{20}{3}W$

381. Four resistances 10 Ω, 5 Ω, 7 Ω and 3 Ω are connected so that they form the sides of a rectangle AB, BC, CD and DA respectively. Another resistance of 10 Ω is connected across the diagonal AC. The equivalent resistance between A and B is

a) 2 Ω b) 5 Ω c) 7 Ω d) 10 Ω

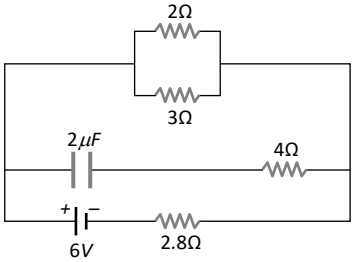
382. In a meter bridge experiment, the ratio of the left gap resistance to right gap resistance is 2:3, the balance point from left is

a) 60 cm b) 50 cm c) 40 cm d) 20 cm

383. A battery is charged at a potential of 15 V in 8 hours when the current flowing is 10 A. The battery on discharge supplies a current of 5 A for 15 hours. The mean terminal voltage during discharge is 14 V. The "$Watt - hour$" efficiency of battery is

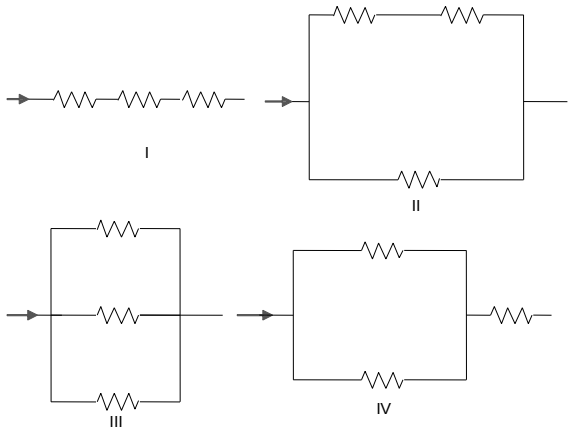
a) 80% b) 90% c) 87.5% d) 82.5%

384. In the figure shown, the capacity of the condenser C is 2 μF. The current in 2Ω resistor is



a) 9 A b) 0.9 A c) $\frac{1}{9}A$ d) $\frac{1}{0.9}A$

385. The three resistances of equal value are arranged in the different combinations shown below. Arrange them in increasing order of power dissipation



a) III < II < IV <I b) II < III < IV < I c) I < IV < III < II d) I < III < II < IV

386. The number of dry cells, each of e.m.f. 1.5 *volt* and internal resistance 0.5 *ohm* that must be joined in series with a resistance of 20 *ohm* so as to send a current of 0.6 *ampere* through the circuit is

a) 2 b) 8 c) 10 d) 12

387. If nearly 10^5C liberate 1 g equivalent of aluminium, then the amount of aluminium (equivalent weight g) deposited through electrolysis in 20 min by a current of 50 A will be

a) 0.09 g b) 0.6 g c) 5.4 g d) 10.8 g

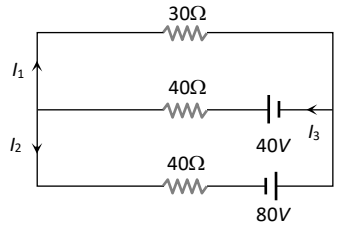
388. The drift velocity of the electrons in a copper wire of length 2 m under the application of a potential difference of 220 V is 0.5ms^{-1}. Their mobility (in m^{2}V^{-1}s^{-1})

a) 2.5×10^{-3} b) 2.5×10^{-2} c) 5×10^{2} d) 5×10^{-3}

389. When a current passes through the junction of two different metals, evolution or absorption of heat at the junction is known as

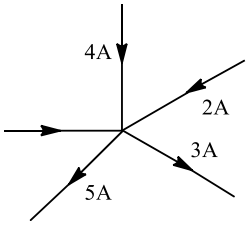
a) Joule effect b) Seebeck effect c) Peltier effect d) Thomson effect

390. In the given circuit the current I_1 is



a) 0.4 A b) -0.4 A c) 0.8 A d) -0.8 A

391. In the given current distribution, what is the value of I?

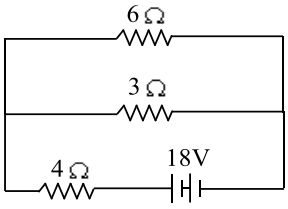


a) 3A b) 8A c) 2A d) 5A

392. A galvanometer of resistance G can measure 1 A current. If a shunt S is used to convert it into an ammeter to measure 10A current. The ratio of $\frac{G}{S}$ is

a) $\frac{1}{9}$ b) $\frac{9}{1}$ c) 10 d) $\frac{1}{10}$

393. The total power dissipated in Watts in the circuit shown here is



a) 16 b) 40 c) 54 d) 4

394. A wire of length 100 cm is connected to a cell of emf 2 V and negligible internal resistance. The resistance of the wire is 3 Ω. The additional resistance required to produce a potential drop of 1 $milli\ volt$ per cm is

a) 60 Ω b) 47 Ω c) 57 Ω d) 35 Ω

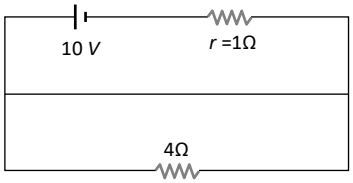
395. For a metallic wire, the ratio $\frac{V}{i}$ (V =applied potential difference and i=current flowing) is

a) Independent of temperature
b) Increases as the temperature rises
c) Decreases as the temperature rises
d) Increases or decreases as temperature rises depending upon the metal

396. For measurement of potential difference, potentiometer is preferred in comparison to voltmeter because

a) Potentiometer is more sensitive than voltmeter
b) The resistance of potentiometer is less than voltmeter
c) Potentiometer is cheaper than voltmeter
d) Potentiometer does not take current from the circuit

397. Potential difference across the terminals of the battery shown in figure is (r = internal resistance of battery)

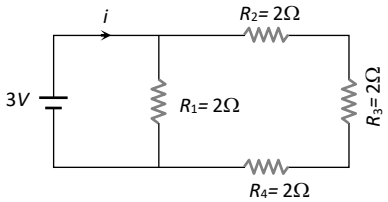


a) 8 V b) 10 V c) 6 V d) Zero

398. If R_1 and R_2 be the resistances of the filaments of 200 W and 100 W electric bulbs operation at 220 V, then $\left(\frac{R_1}{R_2}\right)$ is

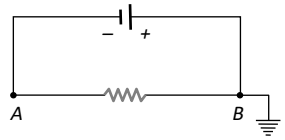
a) 1 b) 2 c) 0.5 d) 4

399. What is the current (i) in the circuit as shown in figure

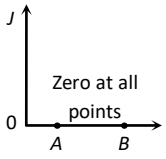


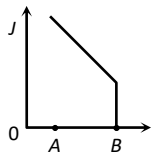
a) 2 A b) 1.2 A c) 1 A d) 0.5 A

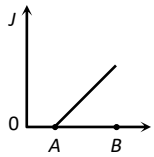
400. A battery is connected to a uniform resistance wire AB and B is earthed. Which one of the graphs below shows how the current density J varies along AB

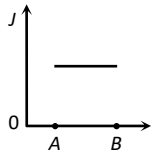


a)

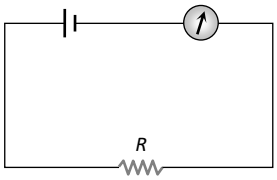


b) 

c) 

d) 

401. A battery of emf 10 V and internal resistance 3Ω is connected to a resistor as shown in the figure. If the current in the circuit is 0.5 A, then the resistance of the resistor will be

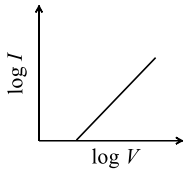


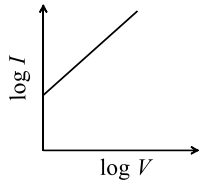
a) 19 Ω b) 17 Ω c) 10 Ω d) 12 Ω

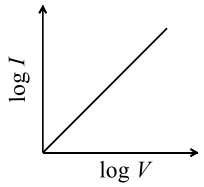
402. Two identical conductors maintained at same temperatures are given potential differences in the ratio 1 :2. Then the ratio of their drift velocities is

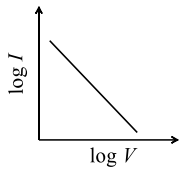
a) 1 :2 b) 3 :2 c) 1 :1 d) $1 : 2^{1/2}$

403. When a current I is passed through a wire of constant resistance, it produces a potential difference V across its ends. The graph drawn between log I and log V will be

a) 

b) 

c) 

d) 

404. The emf of a thermocouple, one junction of which is kept at 0°C, is given by $e = at + bt^2$. The Peltier co-efficient will be

a) $(t + 273)(a + 2bt)$ b) $(t + 273)(a - 2bt)$ c) $(t - 273)(a - 2bt)$ d) $(t - 273)(a + 2bt)$

405. A potentiometer wire, 10 m long, has a resistance of 40Ω. It is connected in series with a resistance box and a 2V storage cell. If the potential gradient along the wire is $(0.1\ \text{mVcm}^{-1})$, the resistance unplugged in the box is

a) 260 Ω b) 760 Ω c) 960 Ω d) 1060 Ω

406. The resistance of a wire of iron is 10 ohm and temp. coefficient of resistance is 5×10^{-3}/°C. At 20°C it carries 30 $milliampere$ of current. Keeping constant potential difference between its ends, the temperature of the wire is raised to 120°C. The current in $milliampere$ that flows in the wire is

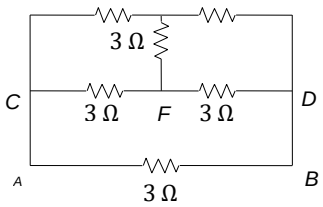
a) 20 b) 15 c) 10 d) 40

407. The resistance of a galvanometer coil is R, then the shunt resistance required to convert it into a ammeter of range 4times, will be

a) $4R$ b) $R/3$ c) $R/4$ d) $R/5$

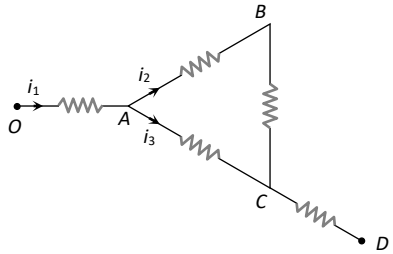
408. Six resistors, each of value 3 Ω are connected as shown in the figure. A cell of emf 3V is connected across AB.The effective resistance across AB and the current through the arm AB will be

3 Ω D 3 Ω



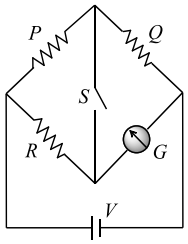
a) 0.6 Ω, 1 A b) 1.5 Ω , 2 A c) 0.6Ω,2 A d) 1.5 Ω, 1 A

409. The current in the arm CD of the circuit will be



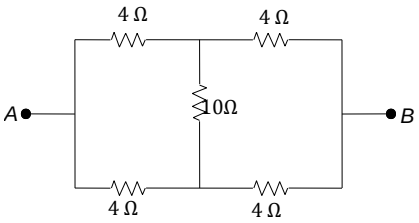
a) $i_1 + i_2$ b) $i_2 + i_3$ c) $i_1 + i_3$ d) $i_1 - i_2 + i_3$

410. In the circuit shown $P \neq R$, the reading of the galvanometer is same with switch S open or closed. Then



a) $I_R = I_G$ b) $I_P = I_G$ c) $I_Q = I_G$ d) $I_Q = I_R$

411. The equivalent resistance across A and B is



a) 2Ω b) 3Ω c) 4Ω d) 5Ω

412. An ammeter and a voltmeter of resistance R are connected in series to an electric cell of negligible internal resistance. Their readings are A and V respectively. If another resistance R is connected in parallel with the voltmeter

a) Both A and V will increase b) Both A and V will decrease
c) A will decrease and V will increase d) A will increase and V will decrease

413. The amount of charge Q passed in time t through a cross-section of a wire is $Q = 5t^2 + 3t + 1$.The value of current at time $t = 5\ s$ is

a) 9A b) 49A c) 53A d) None of these

414. The mass of ions deposited during a given interval of time in the process of electrolysis depends on

a) The current b) The resistance c) The temperature d) The electric power

415. A cell of emf 6 V and resistance 0.5 ohm is short circuited. The current in the cell is

a) 3 amp b) 12 amp c) 24 amp d) 6 amp

416. What is the resistance of a carbon resistance which has bands ofcolours brown, black and brown

a) 100 Ω b) 1000 Ω c) 10 Ω d) 1 Ω

417. Electric field (E) and current density (J) have relation

a) $E \propto J^{-1}$ b) $E \propto J$ c) $E \propto \frac{1}{J^2}$ d) $E^2 \propto \frac{1}{J}$

418. The chemical equivalent of copper and zinc are 32 and 108 respectively. When copper and silver

voltmeters are connected in series and electric current is passed through for sometime, 1.6 g of copper is deposited. Then, the mass of silver deposited will be

a) 3.5 g b) 2.8 g c) 5.4 g d) None of these

419. A beam contains 2×10^8 doubly charged positive ions per cubic centimeter, all of which are moving with a speed of 10^5 m/s. The current density is

a) 6.4 A/m^2 b) 3.2 A/m^2 c) 1.6 A/m^2 d) None of these

420. A Copper wire of length 1 m and radius 1 mm is joined in series with an iron wire of length 2 m and radius 3 mm and a current is passed through the wires. The ratio of the current density in the wires. The ratio of the current density in the copper and iron wires is

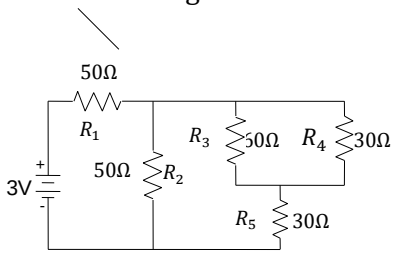
a) 2: 3 b) 6: 1 c) 9: 1 d) 18: 1

421. To draw maximum current from a combination of cells, how should the cells be grouped?

a) Parallel b) Series

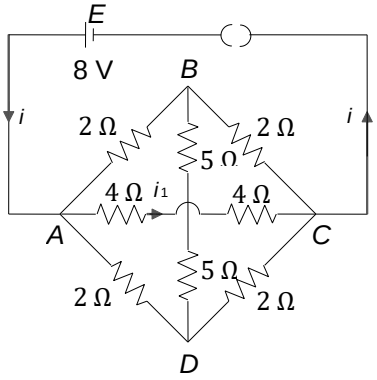
c) Mixed grouped d) Depends upon the relative values of internal and external resistances

422. In circuit shown below, the resistances are given in ohm and the battery is assumed ideal with emf equal to 3V. The voltage across the resistance R_4 is



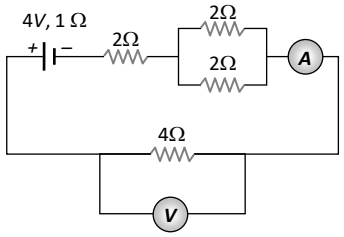
a) 0.4V b) 0.6V c) 1.2V d) 1.5V

423. The value of i_1 in the circuit diagram will be



a) 1A b) $\frac{1}{2}$A c) $\frac{3}{4}$A d) $\frac{3}{2}$A

424. What is the equivalent resistance of the circuit



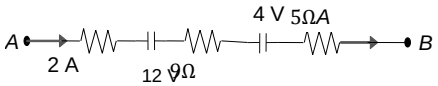
a) 6 Ω b) 7 Ω c) 8 Ω d) 9 Ω

425. A galvanometer of 50 ohm resistance has 25 divisions. A current of 4×10^{-4} $ampere$ gives a deflection of one division. To convert this galvanometer into a voltmeter having a range of 25 $volts$, it should be connected with a resistance of

a) 2500 Ω as a shunt b) 2450 Ω as a shunt c) 2550 Ω in series d) 2450 Ω in series

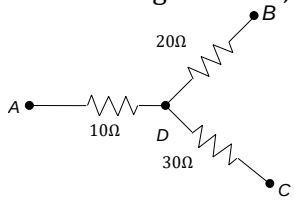
426. The potential difference between A and B in the following figure is

6Ω



a) 32 V b) 48 V c) 24 V d) 14 V

427. In the circuit given here, the points A, B and C are 70V, zero, 10V respectively. Then



a) The point D will be at a potential of 60V
b) The point D will be at a potential of 20V
c) Currents in the path AD, DB and DC are in the ratio of 1:2:3
d) Currents in the path AD, DB and DC are in the ratio of 3 : 2 : 1

428. A house, served by 220 V supply line, is protected by a 9 A fuse. The maximum number of 60 W bulbs in parallel that can be turned on is

a) 11 b) 22 c) 33 d) 44

429. The thermo emf of copper-constantan couple is 40μV per degree. The smallest temperature difference that can be detected with this couple and a galvanometer of 100Ω resistance capable of measuring the maximum current of 1μA is

a) 10°C b) 7.5°C c) 5.0°C d) 2.5°C

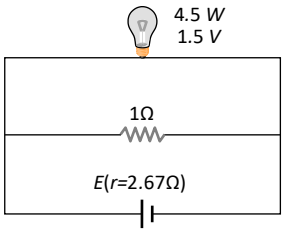
430. When a Daniel cell is connected in the secondary circuit of a potentiometer, the balancing length is found to be 540 cm. If the balancing length becomes 500 cm when the cell is short circuited with 1 Ω, the internal of the cell is

a) 0.08 Ω b) 0.04 Ω c) 1.0 Ω d) 1.08 Ω

431. If in a voltaic cell, 5 g of zinc is consumed, we will get how many ampere hour (given that ECE of zinc is 3.38×10^{-7}kgC^{-1})

a) 2.05 b) 8.2 c) 4.1 d) $5 \times 3.338 \times 10^{-7}$

432. A torch bulb rated as 4.5 W, 1.5 V is connected as shown in the figure. The $e.m.f.$ of the cell needed to make the bulb glow at full intensity is



a) 4.5 V b) 1.5 V c) 2.67 V d) 13.5 V

433. Same current is being passed through a copper voltmeter and a silver voltmeter. The rate of increase in weights of the cathode of the two voltmeters will be proportional to

a) Atomic masses b) Atomic number c) Relative densities d) None of the above

434. Two resistances$R$ and $2R$ are connected in parallel in an electric circuit. The thermal energy developed in in$R$ and $2R$ is in the ratio

a) 1 : 2 b) 1 : 4 c) 4 : 1 d) 2 : 1

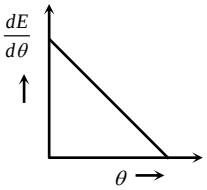
435. Drift velocity v_d varies with the intensity of electric field as per the relation

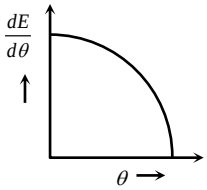
a) $v_d \propto E$ b) $v_d \propto \frac{1}{E}$ c) v_d =constant d) $v_d \propto E^2$

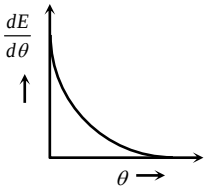
436. A potentiometer wire of length 10 m and resistance 20 Ω is connected is series with a 15V battery and an external resistance 40 Ω. A secondary cell of emf E in the secondary circuit is balanced by 240 cm long the potentiometer wire. The emf E of the cell is

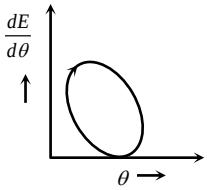
a) 2.4V b) 1.2V c) 2.0V d) 3V

437. Which of the following graphs shows the variation of thermoelectric power with temperature difference between hot and cold junction in thermocouples

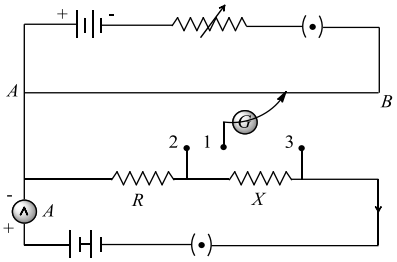
a) 

b) 

c) 

d) 

438. A potentiometer circuit is set up as shown. The potential gradient, across the potentiometer wire, is k volt/cm and the ammeter, present in the cicuit, reads 1.0 A when two way key is switched off. The balance points, when the key between the terminals (i) 1 and 2 (ii) 1 and 3, is plugged in, are found to be at lengths l_1 cm and $l_2 cm$ respectively. The magnitudes, of the resistors R and X, in ohms, are then, equal, respectively, to



a) kl_1 and kl_2 b) $k(l_2 - l_1)$ and kl_2 c) kl_1 and $k(l_2 - l_1)$ d) $k(l_2 - l_1)$ and kl_1

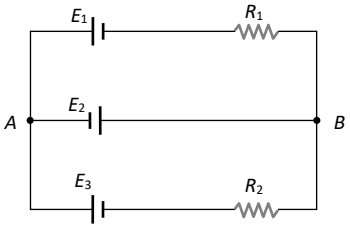
439. An immersion heater is rated 836 $watt$. It should heat 1 $litre$ of water from 10°C to 40°C in about

a) 200 sec b) 150 sec c) 836 sec d) 418 sec

440. In a potentiometer circuit there is a cell of e.m.f. 2 $volt$, a resistance of 5 ohm and a wire of uniform thickness of length 1000 cm and resistance 15 ohm. The potential gradient in the wire is

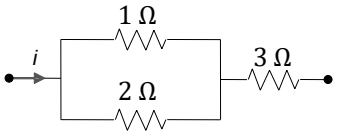
a) $\frac{1}{500} V/cm$ b) $\frac{3}{2000} V/cm$ c) $\frac{3}{5000} V/cm$ d) $\frac{1}{1000} V/cm$

441. In the circuit shown here, $E_1 = E_2 = E_3 = 2V$ and $R_1 = R_2 = 4\ ohm$. The current flowing between points A and B through battery E_2 is



a) Zero b) 2 amp from A to B c) 2 amp from B to A d) None of the above

442. In the circuit shown in figure, power developed across 1Ω , 2Ω , 3 Ω resistance are in ratio of



a) 1 : 2 : 3 b) 4 : 2 : 27 c) 6 : 4 : 9 d) 2 : 1 : 27

443. Two uniform wires A and B are of the same metal and have equal masses. The radius of wire A is twice that of wire B. The total resistance of A and B when connected in parallel is

a) 4 Ω when the resistance of wire A is 4.25 Ω

b) 5 Ω when the resistance of wire A is 4.25 Ω

c) 4 Ω when the resistance of wire B is 4.25 Ω

d) 5 Ω when the resistance of wire B is 4.25 Ω

444. A thermocouple develops 40 $\mu V/kelvin$. If hot and cold junctions are at 40°C and 20°C respectively, then then emf developed by a thermopile using such 150 thermocouples in series shall be

a) 150mV b) 80mV c) 144mV d) 120mV

445. A fuse wire with a radius of 1 mm blows at 1.5 A. If the fuse wire of the same material should blow at 3.0 A,

the radius of the fuse wire must be

a) $4^{1/3}$ mm b) $\sqrt{2}$mm c) 0.5 mm d) 8.0 mm

446. The power dissipated across resistance R which is connected across a battery of potential V is P. If resistance is doubled, then the power becomes

a) $1/2$ b) 2 c) $1/4$ d) 4

447. The colour sequence in a carbon resistor is red, brown, orange and silver. The resistance of the resistor is

a) $21 \times 10^3 \pm 10\%$ b) $23 \times 10^1 \pm 10\%$ c) $21 \times 10^3 \pm 5\%$ d) $12 \times 10^3 \pm 5\%$

448. Two resistors of resistance R_1 and R_2 having $R_1 > R_2$ are connected in parallel. For equivalent resistance R, the correct statement is

a) $R > R_1 + R_2$ b) $R_1 < R < R_2$ c) $R_2 < R < (R_1 + R_2)$ d) $R < R_1$

449. In the absence of applied potential, the electric current flowing through a metallic wire is zero because

a) The electrons remain stationary

b) The electrons are drifted in random direction with a speed of the order of 10^{-2} cms^{-1}

c) The electrons move in random direction with a speed of the order close to that of velocity of light

d) Electrons and ions move in opposite direction

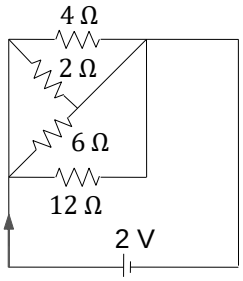
450. A current I is passing through a wire having two sections P and Q of uniform diameters d and $d/2$ respectively. If the mean drift velocity of electrons in sections P and Q is denoted by v_P and v_Q respectively, then

a) $v_P = v_Q$ b) $v_P = \frac{1}{2}v_Q$ c) $v_P = \frac{1}{4}v_Q$ d) $v_P = 2v_Q$

451. A bulb of 220 V and 300 W is connected across 110 V circuit. The percentage reduction in power is

a) 100% b) 25% c) 70% d) 75%

452. The resistance in which the maximum heat is produced is given by



a) 2Ω b) 6Ω c) 4Ω d) 12Ω

453. Calculate the amount of charge flowing in 2 $minutes$ in a wire of resistance 10Ω when a potential difference of 20 V is applied between its ends

a) 120 C b) 240 C c) 20 C d) 4 C

454. If current in an electric bulb changes by 1%, then the power will change by

a) 1% b) 2% c) 4% d) $\frac{1}{2}$%

455. Which of the following is not equal to $watt$

a) $(Amp)^2 \times ohm$ b) $Amp/Volt$ c) $Amp \times Volt$ d) $Joule/sec$

456. A 100 W bulb produces an electric field of 2.9 V/m at a point 3 m away. If the bulb is replaced by 400 W bulb without disturbing other conditions, then the electric field produced at the same point is

a) 2.9 V/m b) 3.5 V/m c) 5 V/m d) 5.8 V/m

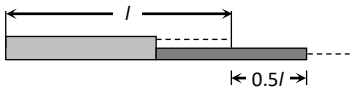
457. Tap supplies water at 20°C. A man takes 1 L of water per minute at 35°C from a geyser connected to the tap. The power of geyser is

a) 1050 W b) 2100 W c) 1500 W d) 3000 W

458. By a cell a current of 0.9 A flows through 2 ohm resistor and 0.3 A through 7 ohm resistor. The internal resistance of the cell is

a) 0.5 Ω b) 1.0 Ω c) 1.2 Ω d) 2.0 Ω

459. In order to quadruple the resistance of a uniform wire, a part of its length was uniformly stretched till the final length of the entire wire was 1.5 times the original length, the part of the wire was fraction equal to



a) 1/8 b) 1/6 c) 1/10 d) 1/4

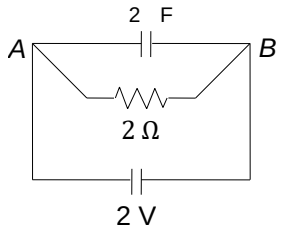
460. The Petlier coefficient of a thermo-couple of metls$A$ and B at junction temperature T is given by

a) $T^2\frac{dE}{dT^2}$ b) $T\frac{dE}{dT}$ c) $T^3\frac{dE^2}{dT}$ d) $T^4\frac{d^2E}{dT^2}$

461. In Wheatstone's bridge $P = 9\ ohm, Q = 11\ ohm, R = 4\ ohm$ and $S = 6\ ohm$. How much resistance must be put in parallel to the resistance S to balance the bridge

a) 24 ohm b) $\frac{44}{9}\ ohm$ c) 26.4 ohm d) 18.7 ohm

462. At steady state, energy stored in capacitor is



a) 4×10^{-6} J b) 2 J c) 4 J d) Zero

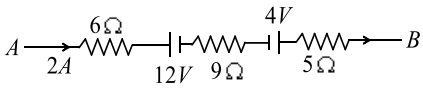
463. A battery of emf E produces currents I_1 and I_2 when connected to external resistances R_1 and R_2 respectively. The internal resistance of the battery is

a) $\frac{I_1R_2 - I_2R_1}{I_2 - I_1}$ b) $\frac{I_1R_2 + I_2R_1}{I_1 - I_2}$ c) $\frac{I_1R_1 + I_2R_2}{I_1 - I_2}$ d) $\frac{I_1R_1 - I_2R_2}{I_2 - I_1}$

464. A cell of emf E is connected across a resistance R. the potential difference between the terminals of the cell is found to be V volt. Then the internal resistance of the cell must be

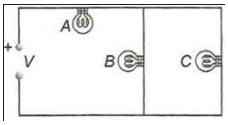
a) (E-V) b) $\frac{(E-V)}{V}R$ c) $\frac{2(E-V)R}{E}$ d) $\frac{2(E-V)V}{R}$

465. The potential difference between A and B in the following figure is



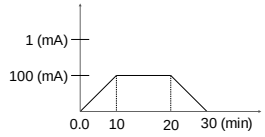
a) 24 V b) 14 V c) 32 V d) 48 V

466. Figure shown three similar lamps A, B and C connected across a power supply. If the lamp C fuses, how will the light emitted by A and B change?



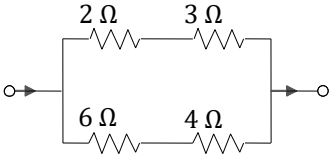
a) No change

b) Brilliance of A decreases and that of B increases



c) Brilliance of both A and B increases d) Brilliance of both A and B decreases

467. In the circuit shown in figure, the heat produced by the 6 Ω resistance is 60Ωcals^{-1}. What heat per second is produced across 3Ω resistance?



a) 30 cal b) 60 cal c) 100 cal d) 120 cal

468. Three equal resistors connected in series across a source of e.m.f. together dissipate 10 watt. If the same

resistors are connected in parallel across the same e.m.f., then the power dissipated will be

a) 10 $watt$ b) 30 $watt$ c) $10/3$ $watt$ d) 90 $watt$

469. A certain wire has a resistance R. The resistance of another wire identical with the first except having twice its diameter is

a) 2 R b) 0.25 R c) 4 R d) 0.5 R

470. Two bulbs of 100 W and 200 W working at 220 V are joined in series with 220 V supply. Total power consumed will be

a) 65 W b) 33 W c) 300 W d) 100 W

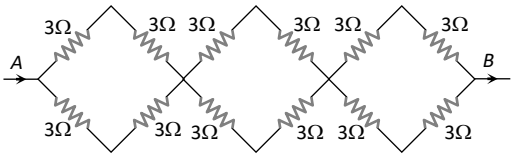
471. A cell in secondary circuit gives null deflection for $2.5m$ length of potentiometer having $10m$ length of wire. If the length of the potentiometer wire is increased by 1 m without changing the cell in the primary, the position of the null point now is

a) 3.5 m b) 3 m c) 2.75 m d) 2.0 m

472. A 10 μF capacitor is charged to 500 V and then its plates are joined together through a resistance of 10 Ω. The heat produced in the resistance is

a) 500 J b) 250 J c) 125 J d) 1.25 J

473. In the network of resistors shown in the adjoining figure, the equivalent resistance between A and B is



a) 54 ohm b) 18 ohm c) 36 ohm d) 9 ohm

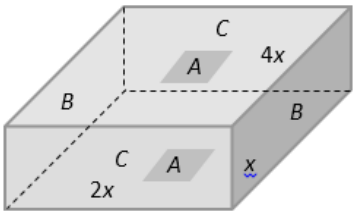
474. In a balanced Wheatstone's network, the resistance in the arms Q and S are interchanged. As a result of this

a) Network is not balanced
b) Network is still balanced
c) Galvanometer shows zero deflection
d) Galvanometer and the cell must be interchanged to balance

475. A uniform wire of 16 Ω is made into the form of square. Two opposite corners of the square are connected by a wire of resistance 16Ω. The effective resistance between the other two opposite corners is

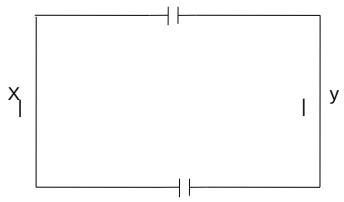
a) 32Ω b) 20Ω c) 8Ω d) 4Ω

476. Given figure shows a rectangular block with dimensions x, $2x$ and $4x$. Electrical contacts can be made to the block between opposite pairs of faces (for example, between the faces labelled $A-A$, $B-B$ and $C-C$). Between which two faces would the maximum electrical resistance be obtained ($A-A$: Top and bottom faces, $B-B$: Left and right faces, $C-C$: Front and rear faces)



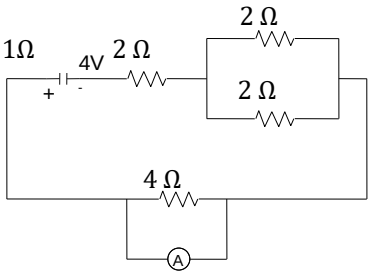
a) $A-A$
b) $B-B$
c) $C-C$
d) Same for all three pairs

477. Two similar accumulators each of emf E and internal resistance r are connected as shown in the following figure. Then, the potential difference between x and y is



a) 2E b) E c) Zero d) None of these

478. The current passing through the ideal ammeter in the circuit given below is



a) 1.25A b) 1A c) 0.75A d) 0.5A

479. Two resistances R_1 and another R_2 of the same material but twice the length and half the thickness are connected in series with a standard battery E of internal resistance r. The balancing point is

a) $\frac{1}{8l}$ b) $\frac{1}{4l}$ c) $8\,l$ d) $16\,l$

480. An immersion heater with electrical resistance 7 Ω is immersed in 0.1 kg of water at 20°C for 3 min. If the flow of current is 4 A, what is the final temperature of the water in ideal conditions?
(Specific heat capacity of water $= 4.2 \times 10^3 \text{Jkg})^{-1}\text{K}^{-1}$

a) 28°C b) 48°C c) 52°C d) 68°C

481. The resistance of hot tungsten filament is about 10 times the cold resistance. What will be the resistance of 100 W and 200 V lamp, when not in use?

a) 40Ω b) 20Ω c) 400Ω d) 20Ω

482. How many coulombs of electric charge must pass through acidulated water in order to release 22.4 L Of hydrogen at NTP?

a) 96500 Faraday b) 193000 coulomb c) 196500 Faraday d) 96500 coulomb

483. If an ammeter is to be used in place of a voltmeter, then we must connect with the ammeter a

a) Low resistance in parallel b) High resistance in parallel
c) High resistance in series d) Low resistance in series

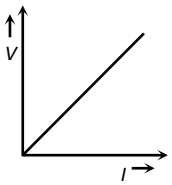
484. Emf is most closely related to

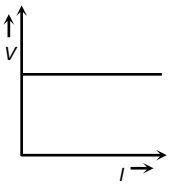
a) Mechanical force b) Potential difference c) Electric field d) Magnetic field

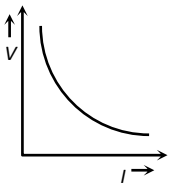
485. The electrolyte used in Lechlanche cell is

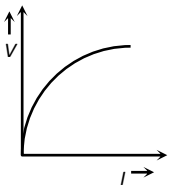
a) Copper sulphate solution b) Ammonium chloride solution
c) Dilute sulphuric acid d) Zinc sulphate

486. Which of the adjoining graphs represents *ohmic* resistance

a) 

b) 

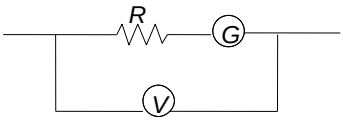
c) 

d) 

487. The resistance of a wire of uniform diameter d and length L is R. The resistance of another wire of the same material but diameter $2d$ and length 4 L will be

a) $2R$ b) R c) $R/2$ d) $R/4$

488. If resistance of voltmeter is 10000Ω and resistance of galvanometer is 2Ω, then find R when voltmeter reads 12V and galvanometer reads 0.1A.



a) 118Ω b) 120Ω c) 124Ω d) 114Ω

489. Ampere hour is the unit of
a) Quantity of charges b) Potential c) Energy d) Current

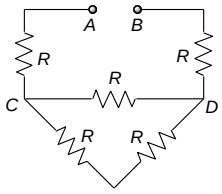
490. The equivalent resistance of resistor connected in series is always
a) Equal to the mean of component resistors
b) Less than the lowest of component resistors
c) In between the lowest and the highest of component resistors
d) Equal to sum of component resistors

491. A cell having emf of 1.5V, when connected across a resistance of 14 Ω, produces a voltage of only 1.4V across this resistance. The internal resistance of the cell must be
a) 1 Ω b) 14 Ω c) 15 Ω d) 21 Ω

492. A resistor R and 2μF capacitor in series is connected through a switch to 200 V direct supplies. Across the capacitor is a neon bulb that lights up at 120 V. Calculate the value of R to make the bulk light up 5 s alter the switch has been closed $(\log_{10} 2.5 = 0.4)$
a) $1.7 \times 10^5 \Omega$ b) $2.7 \times 10^6 \Omega$ c) $3.3 \times 10^7 \Omega$ d) $1.3 \times 10^4 \Omega$

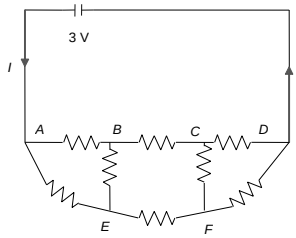
493. The drift velocity does not depend upon
a) Cross-section of the wire b) Length of the wire
c) Number of free electrons d) Magnitude of the current

494. What is the equivalent resistance between points A and B in the circuit if figure, if $R = 3\ \Omega$?



a) 8 Ω b) 9 Ω c) 12 Ω d) 15 Ω

495. Figure shows a network of eight resistors, each equal to 2 Ω, connected to a 3V battery of negligible internal resistance. The current I in the circuit is



a) 0.25A b) 0.50A c) 0.75A d) 1.0A

496. A cell of emf$E$ and internal resistance r supplies currents for the same time t through external resistance $R_1 = 100\ \Omega$and$R_2 = 40\ \Omega$ separately. If the heat developed in both the cases in the same, then the internal resistance of the cell is given by
a) 28.6 Ω b) 70 Ω c) 63.3 Ω d) 140 Ω

497. The electric bulbs have tungsten filaments of same length. If one of then gives 60 *watt* and other 100 *watt*, then
a) 100 *watt* bulb has thicker filament
b) 60 *watt* bulb has thicker filament
c) Both filaments are of same thickness
d) It is possible to get different wattage unless the lengths are different

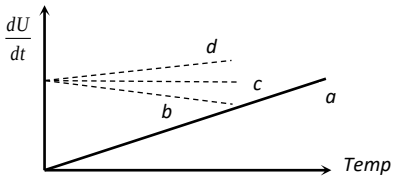
498. When an electrical appliance is switched on, it responds almost immediately, because
a) The electrons in the connecting wires move with the speed of light

b) The electrical signal is carried by electromagnetic waves moving with the speed of light

c) The electrons move with speed which is close to but less than speed of light

d) The electron are stagnant

499. A constant current i is passed through a resistor. Taking the temperature coefficient of resistance into account, indicate which of the plots shown in figure best represents the rate of production of thermal energy in the resistor



a) a b) b c) c d) d

500. If voltage across a bulb rated 220 Volt-100 Watt drops by 2.5% of its rated value, the percentage of the rated value by which the power would decrease is

a) 20% b) 2.5% c) 5% d) 10%

501. Current is flowing with a current density $J = 480\text{Acm}^{-2}$ in a copper wire. Assuming that each copper atom contributes one free electron and given that

Avogadro number$=6.0 \times 10^{23}$atoms mol^{-1}

Density of copper$=9.0$g cm^{-3}

Atomic weight of copper $=64$ g mol^{-1}

The drift velocity of electrons is

a) 1 mm s^{-1} b) 2 mm s^{-1} c) 0.5 mm s^{-1} d) 0.36 mm s^{-1}

502. An electric wire of length $'L'$ and area of cross-section a has resistance R ohm. Another wire of the same material having same length and area of cross-section $4a$ has a resistance of

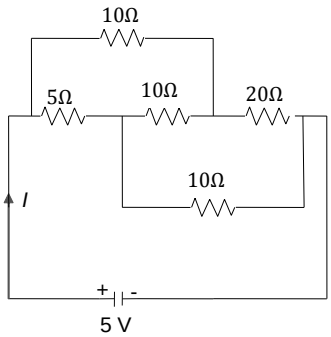
a) $4R$ b) $R/4$ c) $R/16$ d) $16R$

503. When a current flows through a conductor its temperature

a) May increase or decrease b) Remains same

c) Decrease d) Increase

504. The current I drawn from the 5V source will be



a) 0.33A b) 0.5A c) 0.67A d) 0.17A

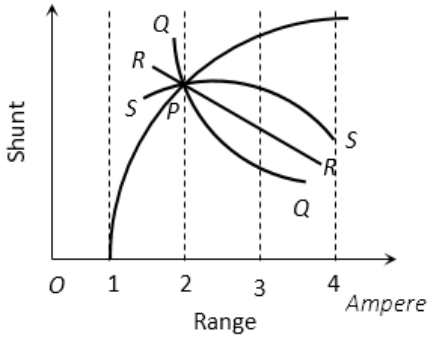
505. The voltage of clouds is 4×10^6V with respect to ground. In a light ning strike lasting 100 ms, a charge of 4 C is delivered to the ground. The power of lightning strike is

a) 160 MW b) 80 MW c) 20 MW d) 500 Kw

506. An electric bulb is rated 220V-100W. The power consumed by it when operated on 110 V will be

a) 75W b) 40W c) 25W d) 50W

507. The ammeter has range 1 $ampere$ without shunt. The range can be varied by using different shunt resistances. The graph between shunt resistance and range will have the nature



a) P b) Q c) R d) S

508. 1kg piece of copper is drawn into a wire 1 mm thick, and another piece into a wire 2 mm thick. Compare the resistance of these wires

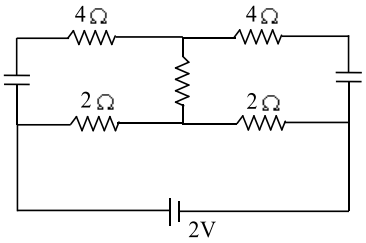
a) 2: 1 b) 4: 1 c) 8: 1 d) 16: 1

509. Faraday's 2nd law states that mass deposited on the electrode is directly proportional to

a) Atomic mass b) Atomic mass × Velocity

c) Atomic mass/Valency d) Valency

510. Find the power of the circuit



a) 1.5 W b) 2 W c) 1 W d) None of these

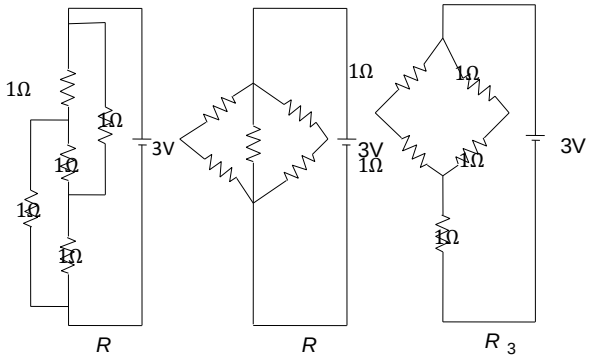
511. When two resistances R_1 and R_2 are connected in series, they consume 12 W powers. When they are connected in parallel, they consume 50 W powers. What the ratio of the powers of $R_1$and R_2?

a) 1/4 b) 4 c) 3/2 d) 3

512. A milliammeter of range 10 mA has a coil of resistance 1 Ω. To use it as voltmeter of range 10 $volt$, the resistance that must be connected in series with it, will be

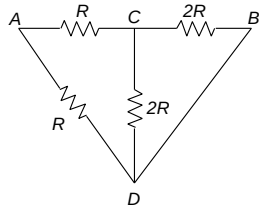
a) 999 Ω b) 99 Ω c) 1000 Ω d) None of these

513. Figure shows three resistor configurations R_1, R_2 and R_3 connected to 3 V batteries. If the power dissipated by the configuration R_1, R_2 and R_3 IS $P_1, P_2$and P_3, respectively, then



a) $P_1 > P_2 > P_3$ b) $P_1 > P_3 > P_2$ c) $P_2 > P_1 > P_3$ d) $P_3 > P_2 > P_1$

514. The effective resistance between points A and B is

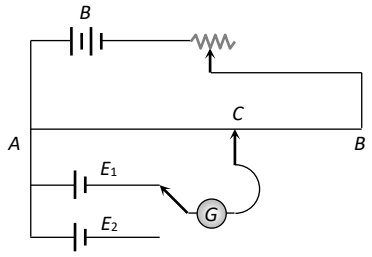


a) R b) $\frac{R}{3}$ c) $\frac{2R}{3}$ d) $\frac{3R}{5}$

515. The emf is thermocouple changes sign at 600 K. If the neutral temperature is 210°C, the temperature of cold junction is

a) 180 K b) 117 K c) 93°C d) 90°C

516. The circuit shown here is used to compare the e.m.f.'s of two cells E_1 and $E_2(E_1 > E_2)$.The null point is at C when the galvanometer is connected to E_1. When the galvanometer is connected to E_2, the null point will be



a) To the left of C b) To the right of C c) At C itself d) No where on AB

517. What is the volume of hydrogen liberated at NTP by the amount of charge which liberates 0.3175 g of copper?

a) 224 cc b) 112 cc c) 56 cc d) 1120 cc

518. In a closed circuit, the current I(in ampere) at an instant of time t(in second) is given by $I = 4 - 0.08t$.The number of electrons flowing in 50s through the cross-section of the conductor is

a) 1.25×10^{19} b) 6.25×10^{20} c) 5.25×10^{19} d) 2.55×10^{20}

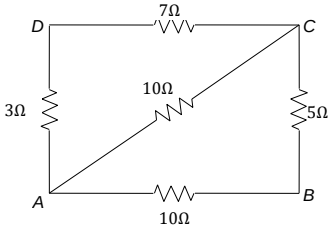
519. A 60 $watt$ bulb operates on $220V$ supply. The current flowing through the bulb is

a) $11/3$ amp b) $3/11$ amp c) 3 amp d) 6 amp

520. The number of free electrons per 100 mm of ordinary copper wire is 2×10^{21}.Average drift speed of electrons is 0.25mms^{-1}. The current flowing is

a) 8 A b) 0.8 A c) 80 A d) 5 A

521. The resistance is connected as shown in the figure below. Find the equivalent resistance between the points A and B.



a) 205Ω b) 10 Ω c) 3.5 Ω d) 5 Ω

522. A certain piece of silver of given mass is to be made like a wire. Which of the following combinations of length (L) and the area of cross-section (A) will lead to the smallest resistance

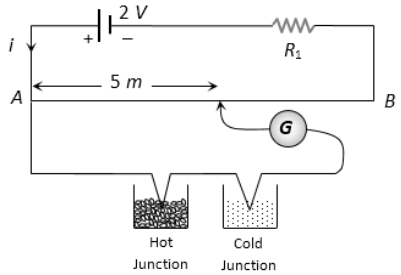
a) L and A b) $2L$ and $A/2$

c) $L/2$ and 2 A d) Any of the above, because volume of silver remains same

523. A galvanometer whose resistance is 120Ω gives full scale deflection with a current of 0.005 A so that it can read a maximum current of 10 A. A shunt resistance is added in parallel with it. The resistance of the ammeter so formed is

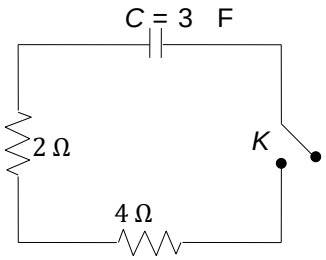
a) 0.06 Ω b) 0.006 Ω c) 0.6 Ω d) 6 Ω

524. In the following circuit a 10 m long potentiometer wire with resistance 1.2 ohm/m, a resistance R_1 and an accumulator of emf 2 V are connected in series. When the emf of thermocouple is 2.4 mV then the deflection in galvanometer is zero. The current supplied by the accumulator will be



a) $4 \times 10^{-4} A$ b) $8 \times 10^{-4} A$ c) $4 \times 10^{-3} A$ d) $8 \times 10^{-3} A$

525. A capacitor of capacitance 3μF is first charged by connecting across 10 V battery, then it is allowed to get discharged through 2 Ω and 4Ω resistor by closing the key Kas shown in figure. The total energy dissipated in 2Ω resistor is equal to



a) 0.15 m J b) 0.5 m J c) 0.05 m J d) 1.0 m J

526. Two resistors are connected (a) in series (b) in parallel. The equivalent resistance in the two cases are 9 *ohm* and 2 *ohm* respectively. Then the resistance of the component resistors are

a) 2 *ohm* and 7 *ohm* b) 3 *ohm* and 6 *ohm* c) 3 *ohm* and 9 *ohm* d) 5 *ohm* and 4 *ohm*

527. 10 wires (same length, same area, same material) are connected in parallel and each has 1Ω resistance, then the equivalent resistance will be

a) 10 Ω b) 1 Ω c) 0.1 Ω d) 0.001 Ω

528. A cell of constant emf first connected to a resistance $R_1$and then connected to a resistanceR_2.

a) $\sqrt{R_1 R_2}$ b) $\sqrt{\frac{R_1}{R_2}}$ c) $\frac{R_1 - R_2}{2}$ d) $\frac{R_1 + R_2}{2}$

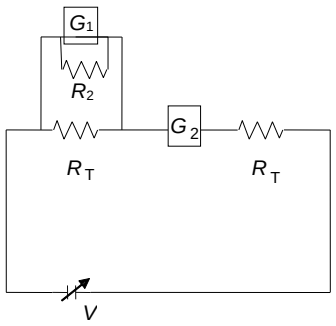
529. When a current of 1 ampere is passed through a conductor whose ends are maintained at temperature difference of 1°C, the amount of heat evolved or absorbed is called

a) Peltier coefficient b) Thomson coefficient

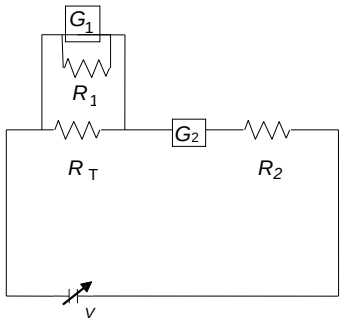
c) Thermoelectric power d) Thermo *e*.m.f.

530. To verify Ohm's law, a student is provided with a test resistor R_T, a high resistance R_1, a small resistance R_2, two identical galvanometers $G_1$and $G_2$and a variable voltage source V. the correct circuit to carry out the experiment is

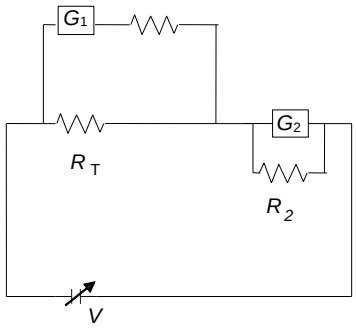
a)



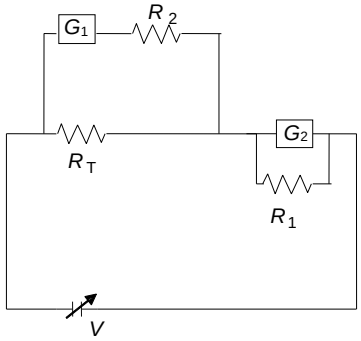
b)



c)



d)



531. To liberate two litres of hydrogen at 222.4 atmosphere from acidulated water the quantity of electricity that must pass through is

a) 44.8 C b) 96500 C c) 193000 C d) 386000 C

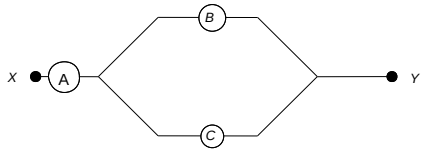
532. A galvanometer having a resistance of 8 ohm is shunted by a wire of resistance 2 ohm. If the total current is 1 amp, the part of it passing through the shunt will be

a) 0.25 amp b) 0.8 amp c) 0.2 amp d) 0.5 amp

533. The resistance of a conductor is 5 ohm at 50°C and 6 ohmat 100°C. Its resistance at 0°C is

a) 1 ohm b) 2 ohm c) 3 ohm d) 4 ohm

534. Three voltmeters A, B and C having resistances R, 1.5R and 3R respectively are used in a circuit as shown. When a potential difference is applied between X and Y, the readings of the voltmeters are $V_1, V_2 and V_3$ respectively. Then



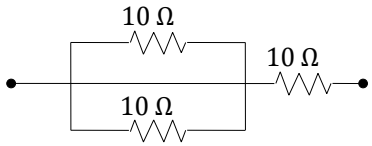
a) $V_1 = V_2 = V_3$ b) $V_1 < V_2 = V_2$ c) $V_1 > V_2 > V_3$ d) $V_1 > V_2 > V_3$

535. The heat generated through 2 ohm and 8 ohm resistances separately, when a condenser of 200 μF capacity charged to 200 V is discharged one by one, will be

a) 4 J and 16 J respectively b) 16 J and 4 J respectively

c) 4 J and 8 J respectively d) 4 J and 4 J respectively

536. Three equal resistances, each of 10 Ω are connected as shown in figure. The maximum power consumed by each resistance is 20 W. What is maximum power that can be consumed by the combination?



a) 5 W b) 15 W c) 30 W d) 60 W

537. A heater coil is cut into two parts of equal length and one of them is used in the heater. The ratio of the heat produced by this half coil to that by the original coil is

a) 2 :1 b) 1 :2 c) 1 :4 d) 4 :1

538. A galvanometer of 25 Ω resistance can read a maximum current of $6mA$. It can be used as a voltmeter to measure a maximum of $6\ V$ by connecting a resistance to the galvanometer. Identify the correct choice in the given answers

a) 1025 Ω in series b) 1025 Ω in parallel c) 975 Ω in series d) 975 Ω in parallel

539. If two wires having resistances R and $2R$ both are joined in series and in parallel, then ratio of heat generated in this situation, applying the same voltage is

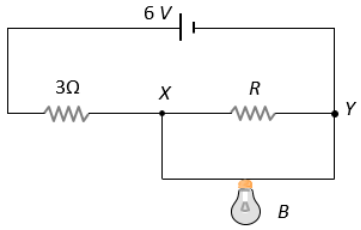
a) 2 :1 b) 1 :2 c) 2 :9 d) 9 :2

540. What determines the emf between the two metals placed in an electrolyte?

a) Relative position of metals in the electro chemical series b) Distance between them

c) Strength of electrolyte d) Nature of electrolyte

541. In the following circuit, bulb rated as 1.5 V, 0.45 W. If bulbs glows with full intensity then what will be the equivalent resistance between X and Y



a) 0.45 Ω b) 1 Ω c) 3 Ω d) 5 Ω

542. The electron drift speed is small and the charge of the electron is also small but still, we obtain large current in a conductor. This is due to

a) The conducting property of the conductor

b) The resistance of the conductor is small

c) The electron number density of the conductor is small

d) The electron number density of the conductor is enormous

543. A small power station supplies electricity to 5000 lamps connected in parallel. Each lamp has a resistance of 220 and is operated at 220 V. The total current supplied by the station is

a) 2500 A b) 3500 A c) 5000 A d) 10000 A

544. An emf of 0.9 V is generated when the temperature difference hot and cold junction of thermocouple is 75 K. Assuming that the thermo emf is directly proportional to the temperature difference, the extent to which the thermo emf will change when the cold junction is heated up by 15 K is

a) 10% b) 20% c) 40% d) 60%

545. Which of the following is vector quantity

a) Current density b) Current c) Wattlesscurrent d) Power

546. If the balance point is obtained at the $35^{th}cm$ in a meter bridge, the resistances in the left and right gaps are in the ratio of

a) 7 :13 b) 13 :7 c) 9 :11 d) 11 :9

547. A lead acid accumulatory (storage battery) is connected to a battery charge for over night charging. Which of the following observations will indicate that the battery was partly charged during the next morning

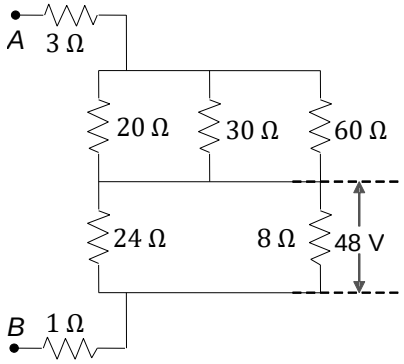
a) The density of acid has decreased b) The density of acid has increased

c) The acid has changed colour d) The acid level has dropped

548. The temperature of cold junction of thermo-couple is 0°C. If the neutral temperature is 270°C, then the inversion temperature is

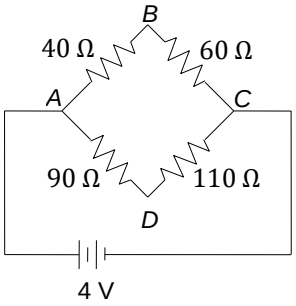
a) 540°C b) 520°C c) 640°C d) 580°C

549. The potential difference across 8Ω resistance is 48V as shown in figure. The value of potential difference across points A and B will be



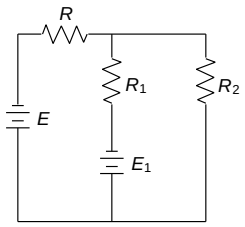
a) 62V b) 80V c) 128V d) 160V

550. Four resistances 40Ω, 60Ω, 90Ω and 110Ω make the arms of a quadrilateral $ABCD$. Across AC is the battery circuit, the emf of the battery being 4V and internal resistance negligible. The potential difference across BD is



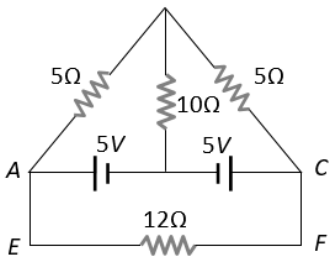
a) 1V b) −1V c) −0.2V d) 0.2V

551. Figure shows a circuit with known resistances R_1 .Neglect the internal resistance of the sources of current and resistance of the connecting wire. The magnitude of electromotive force E_1 such that the resistances R is zero will be



a) ER_1/R_2 b) ER_2/R_1 c) $E(R_1 + R_2)/R_2$ d) $ER_1/(R_1 + R_2)$

552. In the circuit of adjoining figure the current though 12 Ω resistor will be



a) 1 A b) $\frac{1}{5}A$ c) $\frac{2}{5}A$ d) 0 A

553. The thermo emf of a thermo-couple is found to depend on temperature T(in degree Celsius) as $E = 4T -$

$\frac{T^2}{200}$, where T°C is the temperature of the hot junction. The neutral and inversion temperature of the thermocouple are (in degree celsius)

a) 100, 200 b) 200, 400 c) 300, 600 d) 400, 800

554. In a thermocouple, the temperature that does not depend on the temperature of the cold junction is called

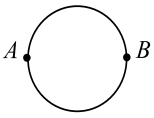
a) Neutral temperature b) Temperature of inversion

c) Both the above d) None of the above

555. A current I is passed for a time t through a number of voltmeters. If m is the mass of a substance deposited on an electrode and z is its electrochemical equivalent, then

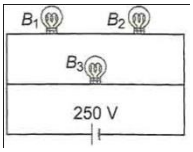
a) $\frac{zIt}{m}$ = constant b) $\frac{z}{mIt}$ = constant c) $\frac{I}{zmt}$ = constant d) $\frac{It}{zm}$ = constant

556. A wire of resistance 12 ohms per meter is bent to form a complete circle of radius 10 cm. The resistance between its two diametrically opposite points A and B as shown in the figure, is



a) 0.6 π Ω b) 3 Ω c) 6 π Ω d) 6 Ω

557. A 100 W bulb B_1 and two 60 W bulb B_2andB_3 are connected to a 250 V source as shown in the figure. Now



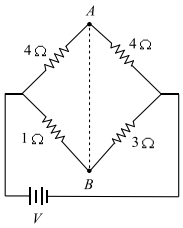
W_1, W_2andW_3 are the out-put powers of the bulbs B_1, B_2andB_3 respectively. Then

a) $W_1 > W_2 = W_3$ b) $W_1 > W_2 > W_3$ c) $W_1 < W_2 = W_3$ d) $W_1 < W_2 < W_3$

558. When the number of turns of the coil is doubled, the current sensitivity of a moving coil galvanometer is doubled whereas the voltage sensitivity of the galvanometer

a) Remains the same b) Is halved c) Is doubled d) Is quadrupled

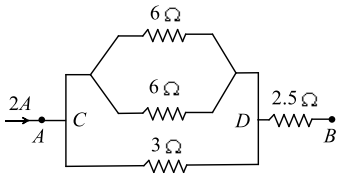
559. In the circuit shown, if a conducting wire is connected between points A and B, the current in this wire will



a) Be zero b) Flow from B to A

c) Flow from A to B d) Flow in the direction which will be decided by the value of V

560. The equivalent resistance and potential difference between A and B for the circuit is respectively



a) 4 Ω, 8 V b) 8 Ω, 4 V c) 2 Ω, 2 V d) 16 Ω, 8 V

561. A thermocouple is made from two metals, Antimony and Bismuth. If one junction of the couple is kept hot and the other is kept cold, then, an electric current will

a) Flow from Antimony to Bismuth at the hot junction

b) Flow from Bismuth to Antimony at the cold junction

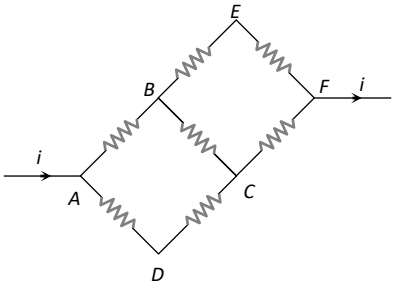
c) Not flow through the thermocouple

d) Flow from Antimony to Bismuth at the cold junction

562. Incandescent bulbs are designed by keeping in mind that the resistance of their filament increases with the increase in temperature. If at room temperature, 100 W, 60 W and 40 W bulbs have filament resistances R_{100}, R_{60} and R_{40}, respectively, the relation between these resistances is

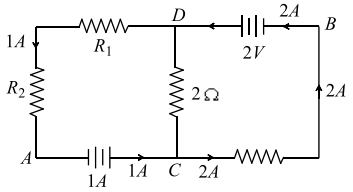
a) $\frac{1}{R_{100}} = \frac{1}{R_{40}} + \frac{1}{R_{60}}$ b) $R_{100} = R_{40} + R_{60}$ c) $R_{100} > R_{60} > R_{40}$ d) $\frac{1}{R_{100}} > \frac{1}{R_{60}} > \frac{1}{R_{40}}$

563. In the adjoining circuit diagram each resistance is of 10 Ω. The current in the arm AD will be



a) $\frac{2i}{5}$ b) $\frac{3i}{5}$ c) $\frac{4i}{5}$ d) $\frac{i}{5}$

564. In the circuit shown in the figure, if the potential at point A is taken to be zero, the potential at point B is



a) $-2V$ b) $+1V$ c) $-1V$ d) $+2V$

565. Electroplating does not help in
a) Fine finish to the surface b) Shining appearance
c) Metals to become hard d) Protecting metal against conosion

566. For a certain thermocouple, if the temperature of the cold junction is 0°C, the neutral temperature and inversion temperature are 285°C and 570°C respectively. If the cold junction is brought to 10°C, then the new neutral and inversion temperatures are respectively
a) 285°C and 560°C b) 285°C and 570°C c) 295°C and 560°C d) 275°C and 560°C

567. A wire of diameter 0.02 *metre* contains 10^{28} free electrons per cubic metre. For an electrical current of 100 A, the drift velocity of the free electrons in the wire is nearly
a) $1 \times 10^{-19} m/s$ b) $5 \times 10^{-10} m/s$ c) $2 \times 10^{-4} m/s$ d) $8 \times 10^{3} m/s$

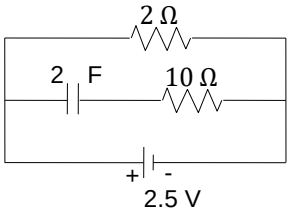
568. In a circuit 5 percent of total current passes through a galvanometer. If resistance of the galvanometer is G then value of the shunt is
a) 19 G b) 20 G c) $\frac{G}{20}$ d) $\frac{G}{19}$

569. In a potentiometer experiment, the galvanometer shows no deflection when a cell is connected across 60 *cm* of the potentiometer wire. If the cell is shunted by a resistance of 6Ω, the balance is obtained across 50 *cm* of the wire. The internal resistance of the cell is
a) 0.5 Ω b) 0.6 Ω c) 1.2 Ω d) 1.5 Ω

570. An electric cable of copper has just one wire of radius 9 mm. Its resistance is 5Ω. This single copper wire of cable is replaced by 6 different well insulated copper wires each of radius 3 mm. The total resistance of the cable will now be equal to
a) 7.5 Ω b) 45 Ω c) 90 Ω d) 270 Ω

571. When 1 g hydrogen (ECE = 1.044×10^{-8} kg C^{-1}) forms water, 34 kcal heat is liberated. The minimum voltage required to decompose water is
a) 0.75 V b) 3 V c) 1.5 V d) 4.5 V

572. A capacitor of capacitance 2μF is connected as shown in figure. The internal resistance of the cell is 0.5Ω. The amount of charge on the capacitor plates is



a) Zero b) 2μ C c) 4μC d) 6μC

573. A moving coil galvanometer is converted into an ammeter reading upto 0.03 A by connecting a shunt of resistance $4r$ across it and into an ammeter reading upto 0.06 A when a shunt of resistance r is connected across it. What is the maximum current which can be sent through this galvanometer if no shunt is used

a) 0.01 A b) 0.02 A c) 0.03 A d) 0.04 A

574. A 25 $watt$, 220 $volt$ bulb and a 100 $watt$, 220 $volt$ bulb are connected in series across a 220 $volt$lines. Which electric bulb will glow more brightly

a) 25 $watt$ bulb b) 100 $watt$ bulb

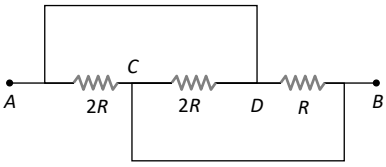
c) First 25 watt and then 100 $watt$ d) Both with same brightness

575. The colour code for a resistor of resistance 3.5$k\Omega$ with 5% tolerance is

a) Orange, green, red and gold b) Red, yellow, black and gold

c) Orange, green, orange and silver d) Orange, green, red and silver

576. What is the equivalent resistance between A and B

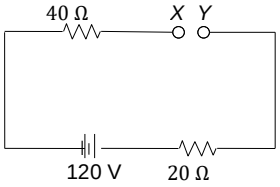


a) $\frac{2}{3}R$ b) $\frac{3}{2}R$ c) $\frac{R}{2}$ d) $2R$

577. Thomson coefficient of a conductor is $10\mu V/K$. The two ends of it are kept at 50°C and 60°C respectively. Amount of heat absorbed by the conductor when a charge of $10C$ flows through it is

a) 1000 J b) 100 J c) 100 mJ d) 1 mJ

578. In the circuit shown in the figure the potential difference between X and Y will be



a) Zero b) 20 V c) 60 V d) 120 V

579. Who among the following scientists made the statement –"Chemical change can produce electricity"

a) Galvani b) Faraday c) Coulomb d) Thomson

580. The electric resistance of a certain wire of iron is R. If its length and radius are both doubled, then

a) The resistance will be doubled and the specific resistance will be halved

b) The resistance will be halved and the specific resistance will remain unchanged

c) The resistance will be halved and the specific resistance will be doubled

d) The resistance and the specific resistance, will both remain unchanged

581. A coil develops heat of 800 cal/sec. When 20 $volts$ is applied across its ends. The resistance of the coil is (1 $cal = 4.2\ joule$)

a) 1.2 Ω b) 1.4 Ω c) 0.12 Ω d) 0.14 Ω

582. A moving coil galvanometer has a resistance of 50Ω and gives full scale deflection for 10 mA. How could it be converted into an ammeter with a full scale deflection for 1A

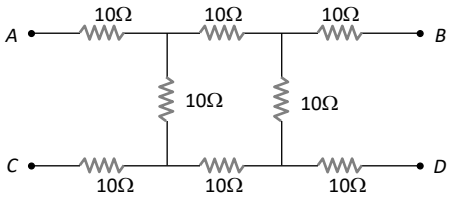
a) 50/99 Ω in series b) 50/99 Ω in parallel c) 0.01 Ω in series d) 0.01 Ω in parallel

583. When the temperature difference between hot and cold junctions of a thermo-couple is 100 K an emf of 1 V is generated. Assume the cold junction is heated by 20 K, the percentage change in thermo emf is

a) 20% b) 30% c) 40% d) 25%

584. A galvanometer having a coil resistance of 60 Ω shows full scale deflection when a current of 1.0 amp passes through it. It can be converted into an ammeter to read currents upto 5.0 amp by
a) Putting in parallel a resistance of 240 Ω b) Putting in series a resistance of 15 Ω
c) Putting in series a resistance of 240 Ω d) Putting in parallel a resistance of 15 Ω

585. What will be the equivalent resistance between the two points A and D



a) 10 Ω b) 20 Ω c) 30 Ω d) 40 Ω

586. The neutral temperature of a thermocouple is 350°C when the cold junction is at 0°C. When the cold junction is immersed in a bath of 30°C, the inversion temperature is
a) 700°C b) 600°C c) 350°C d) 670°C

587. A galvanometer has a resistance 50Ω. A resistance of 5Ω is connected parallel to it. Fraction of the total current flowing through galvanometer is
a) $\frac{1}{10}$ b) $\frac{1}{11}$ c) $\frac{1}{50}$ d) $\frac{2}{15}$

588. The neutral temperature $t_n = 285°C$ is constant for a Cu-Fe thermocouple. When the cold junction is at 0°C, the value of inversion temperature is $t_i = 570°C$ but if the cold junction is at 10°C, the inversion temperature (t_i) will be
a) 550°C b) 560°C c) 570°C d) 580°C

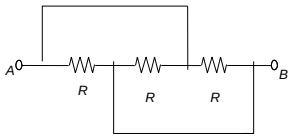
589. In a copper voltmeter experiment, current is decreased to one-fourth of the initial value but is passed for four times the earlier duration. Amount of copper deposited will be
a) Same b) One-fourth the previous value
c) Four times the previous value d) $\frac{1}{16}th$ the previous value

590. A 500 W heating unit is designed to operate from a 115 $volt$ line. If the line voltage drops to 110 volt, the percentage drop in heat output will be
a) 10.20% b) 8.1% c) 8.6% d) 7.6%

591. When the current i is flowing a conductor, the drift velocity is v. If $2i$ current is flowed through the same metal but having double the area of cross-section, then the drift velocity will be
a) $v/4$ b) $v/2$ c) v d) $4v$

592. The material of wire of potentiometer is
a) Copper b) Steel c) Manganin d) Aluminium

593. The resistance across A and Bin the figure below will be



a) $3R$ b) R c) $\frac{R}{3}$ d) None of these

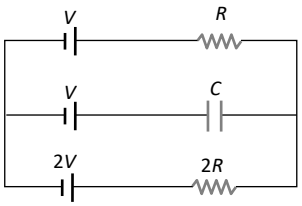
594. It is possible that any some constant value of emf, but the potential difference between the plates is zero?
a) Not, possible
b) Yes, if another identical battery is joined in series
c) Yes, if another identical battery is joined in opposition
d) Yes, possible, if another similar battery is joined in parallel

595. In a potentiometer experiment the balancing with a cell is at length 240 cm. on shunting the cell with a resistance of 2 Ω, the balancing length becomes 120cm. the internal resistance of cell is
a) 4 Ω b) 2 Ω c) 1 Ω d) 0.5 Ω

596. The resistance of a 10m long wire is 10Ω. Its length is increased by 25% by stretching the wire uniformly. Then the resistance of the wire will be

a) 12.5 Ω b) 14.5 Ω c) 15.6 Ω d) 16.6 Ω

597. In the given circuit, with steady current, the potential drop across the capacitor must be

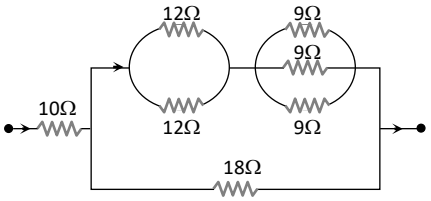


a) V b) $V/2$ c) $V/3$ d) $2V/3$

598. An ammeter gives full scale deflection when current 1.0 A is passed in it. To convert it into 10 A range ammeter, the ratio of its resistance and the shunt resistance will be

a) 1 :9 b) 1 :10 c) 1 :11 d) 9 :1

599. In the following circuit, 18Ω resistor develops $2J/sec$ due to current flowing through it. The power developed across 10Ω resistance is

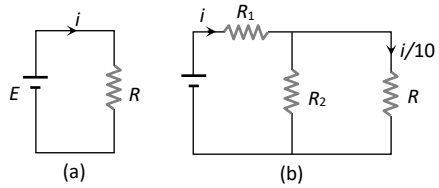


a) 125 W b) 10 W c) $\frac{4}{5}W$ d) 25 W

600. In which of the following substances does resistance decrease with increase in temperature?

a) Copper b) Carbon c) Constantan d) Silver

601. Consider the circuits shown in the figure. Both the circuits are taking same current from battery but current through R in the second circuit is $\frac{1}{10}th$ of current through R in the first circuit. If R is 11 Ω, the value of R_1



a) 9.9 Ω b) 11 Ω c) 8.8 Ω d) 7.7 Ω

602. The resistance of a bulb filament is 100 Ω at a temperature of 100°C. If its temperature coefficient of resistance be 0.005 per°C, its resistance will become 200 Ω at a temperature of

a) 300°C b) 400°C c) 500°C d) 200°C

603. An electric heater is heated respectively by $d.c.$ and $a.c.$ Applied voltage for both the currents is equal. The heat produced per second will be

a) More on heating by $a.c.$ source b) More on heating by $d.c.$ source

c) Same for both d) None of the above

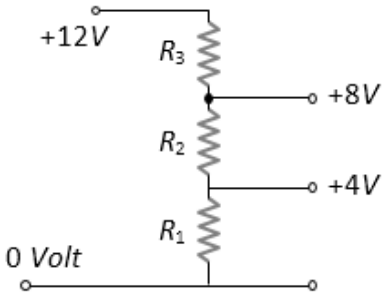
604. The electro chemical equivalent of metal is $3.3 \times 10^{-7}\text{kgC}^{-1}$. The mass of the metal liberated at the cathode when a 3 A current is passed for 2 s, will be

a) 19.8×10^{-7}kg b) 9.9×10^{-7}kg c) 6.6×10^{-7}kg d) 1.1×10^{-7}kg

605. Three resistance P, Q, R each of 2Ω and an unknown resistance S form the four arms of a wheatstone bridge circuit. When a resistance of 6Ω is connected in parallel to S the bridge gets balanced. What is the value of S

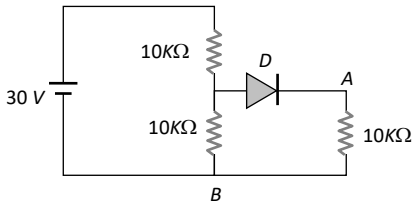
a) 2 Ω b) 3 Ω c) 6 Ω d) 1 Ω

606. A potential divider is used to give outputs of 4 V and 8 V from a 12 V source. Which combination of resistances, $(R_1 : R_2 : R_3)$ gives the correct voltages?



a) 2 :1 :2 b) 1 :1 :1 c) 2 :2 :1 d) 1 :1 :2

607. In the given figure, potential difference between A and B is



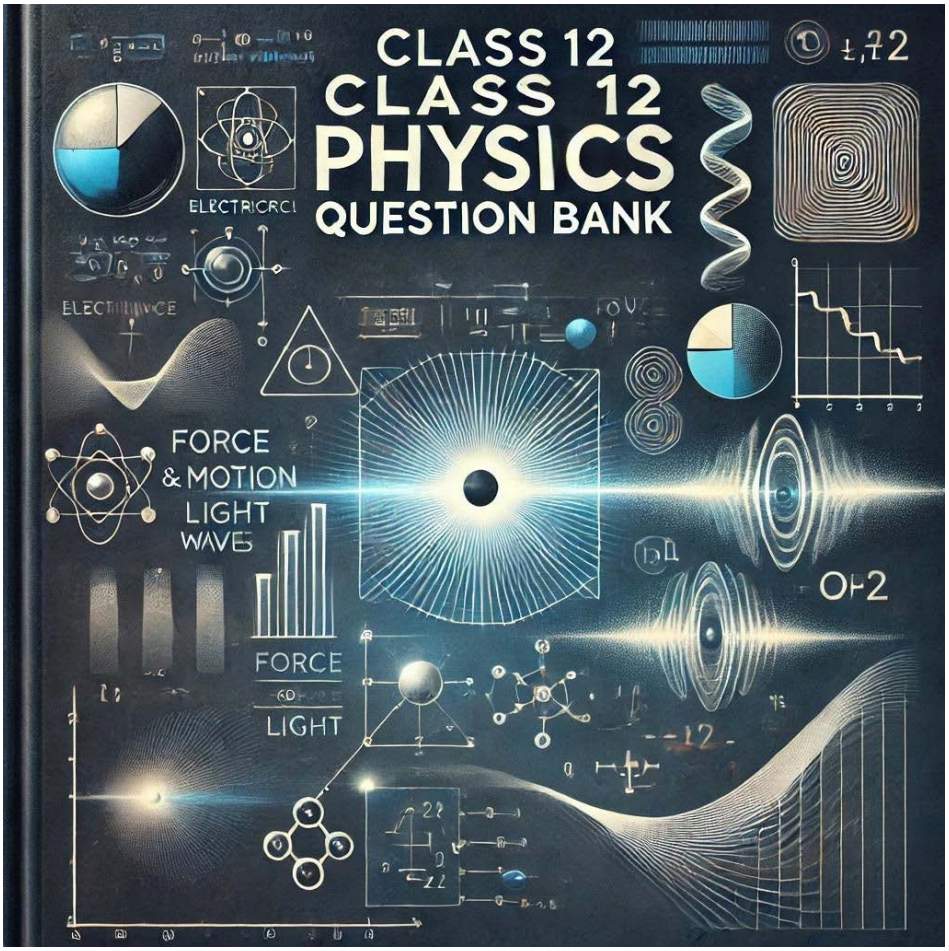
a) 0 b) 5 $volt$ c) 10 $volt$ d) 15 $volt$

1)	c	2)	c	3)	b	4)	b	201)	d	202)	b	203)	b	204)	c
5)	c	6)	d	7)	b	8)	c	205)	b	206)	a	207)	a	208)	d
9)	a	10)	a	11)	a	12)	c	209)	c	210)	b	211)	a	212)	c
13)	c	14)	d	15)	a	16)	a	213)	d	214)	b	215)	c	216)	c
17)	c	18)	d	19)	c	20)	a	217)	b	218)	d	219)	c	220)	b
21)	b	22)	b	23)	b	24)	b	221)	a	222)	c	223)	d	224)	b
25)	b	26)	a	27)	c	28)	b	225)	b	226)	d	227)	b	228)	c
29)	d	30)	b	31)	d	32)	b	229)	c	230)	b	231)	c	232)	d
33)	b	34)	d	35)	b	36)	d	233)	a	234)	c	235)	d	236)	b
37)	c	38)	c	39)	a	40)	a	237)	a	238)	c	239)	d	240)	a
41)	b	42)	c	43)	a	44)	b	241)	b	242)	a	243)	c	244)	d
45)	c	46)	a	47)	c	48)	a	245)	b	246)	d	247)	a	248)	c
49)	d	50)	b	51)	d	52)	b	249)	d	250)	c	251)	a	252)	a
53)	b	54)	c	55)	b	56)	a	253)	d	254)	a	255)	b	256)	c
57)	b	58)	d	59)	d	60)	d	257)	b	258)	d	259)	c	260)	b
61)	b	62)	b	63)	c	64)	c	261)	b	262)	c	263)	c	264)	b
65)	a	66)	a	67)	c	68)	d	265)	b	266)	b	267)	c	268)	c
69)	d	70)	c	71)	a	72)	a	269)	c	270)	c	271)	c	272)	c
73)	c	74)	c	75)	c	76)	c	273)	d	274)	a	275)	c	276)	c
77)	d	78)	b	79)	b	80)	d	277)	b	278)	a	279)	c	280)	a
81)	b	82)	a	83)	d	84)	c	281)	a	282)	a	283)	b	284)	c
85)	b	86)	d	87)	b	88)	a	285)	b	286)	c	287)	b	288)	a
89)	a	90)	b	91)	b	92)	a	289)	c	290)	d	291)	a	292)	a
93)	d	94)	b	95)	b	96)	d	293)	c	294)	d	295)	b	296)	b
97)	a	98)	a	99)	d	100)	b	297)	b	298)	b	299)	c	300)	d
101)	c	102)	a	103)	a	104)	b	301)	b	302)	d	303)	c	304)	b
105)	b	106)	a	107)	d	108)	d	305)	b	306)	a	307)	b	308)	a
109)	b	110)	b	111)	d	112)	d	309)	c	310)	b	311)	c	312)	c
113)	c	114)	d	115)	c	116)	b	313)	c	314)	b	315)	d	316)	a
117)	c	118)	c	119)	a	120)	a	317)	a	318)	b	319)	d	320)	b
121)	c	122)	d	123)	b	124)	b	321)	d	322)	d	323)	b	324)	a
125)	c	126)	c	127)	c	128)	a	325)	c	326)	d	327)	c	328)	c
129)	b	130)	b	131)	d	132)	c	329)	a	330)	a	331)	b	332)	c
133)	d	134)	a	135)	b	136)	c	333)	d	334)	b	335)	c	336)	b
137)	b	138)	c	139)	a	140)	d	337)	b	338)	d	339)	c	340)	d
141)	d	142)	c	143)	c	144)	c	341)	b	342)	a	343)	d	344)	a
145)	d	146)	b	147)	d	148)	c	345)	b	346)	c	347)	c	348)	d
149)	a	150)	d	151)	a	152)	c	349)	b	350)	a	351)	a	352)	c
153)	c	154)	b	155)	a	156)	b	353)	b	354)	d	355)	a	356)	d
157)	a	158)	b	159)	a	160)	b	357)	a	358)	a	359)	b	360)	c
161)	d	162)	d	163)	d	164)	c	361)	b	362)	c	363)	a	364)	d
165)	a	166)	c	167)	d	168)	c	365)	c	366)	a	367)	c	368)	a
169)	a	170)	b	171)	a	172)	c	369)	c	370)	b	371)	c	372)	d
173)	a	174)	c	175)	a	176)	b	373)	d	374)	d	375)	c	376)	c
177)	a	178)	c	179)	d	180)	b	377)	b	378)	c	379)	c	380)	c
181)	b	182)	c	183)	a	184)	b	381)	b	382)	c	383)	c	384)	b
185)	c	186)	a	187)	c	188)	b	385)	a	386)	c	387)	c	388)	d
189)	a	190)	a	191)	a	192)	c	389)	c	390)	b	391)	c	392)	b
193)	c	194)	b	195)	a	196)	b	393)	c	394)	c	395)	b	396)	d
197)	b	198)	b	199)	c	200)	b	397)	d	398)	c	399)	a	400)	d

401)	b	402)	a	403)	a	404)	a
405)	b	406)	a	407)	b	408)	d
409)	b	410)	a	411)	c	412)	d
413)	c	414)	a	415)	b	416)	a
417)	b	418)	c	419)	a	420)	c
421)	d	422)	a	423)	a	424)	c
425)	d	426)	b	427)	d	428)	c
429)	d	430)	a	431)	c	432)	d
433)	a	434)	d	435)	a	436)	b
437)	a	438)	c	439)	b	440)	b
441)	b	442)	b	443)	a	444)	d
445)	a	446)	a	447)	a	448)	d
449)	c	450)	c	451)	d	452)	a
453)	b	454)	b	455)	b	456)	d
457)	a	458)	a	459)	a	460)	b
461)	c	462)	a	463)	d	464)	b
465)	d	466)	b	467)	d	468)	d
469)	b	470)	a	471)	c	472)	d
473)	d	474)	a	475)	d	476)	c
477)	c	478)	d	479)	c	480)	d
481)	a	482)	b	483)	c	484)	b
485)	b	486)	a	487)	b	488)	a
489)	a	490)	d	491)	a	492)	a
493)	b	494)	a	495)	d	496)	c
497)	a	498)	b	499)	d	500)	c
501)	d	502)	b	503)	d	504)	b
505)	a	506)	c	507)	b	508)	d
509)	c	510)	c	511)	c	512)	a
513)	c	514)	c	515)	c	516)	a
517)	b	518)	b	519)	b	520)	b
521)	d	522)	c	523)	c	524)	a
525)	c	526)	b	527)	c	528)	a
529)	b	530)	c	531)	d	532)	b
533)	d	534)	a	535)	d	536)	c
537)	a	538)	c	539)	c	540)	a
541)	b	542)	d	543)	c	544)	b
545)	a	546)	a	547)	b	548)	a
549)	d	550)	d	551)	c	552)	d
553)	d	554)	a	555)	a	556)	a
557)	d	558)	a	559)	b	560)	a
561)	d	562)	b	563)	a	564)	b
565)	c	566)	a	567)	c	568)	d
569)	c	570)	a	571)	c	572)	c
573)	b	574)	a	575)	a	576)	c
577)	d	578)	d	579)	a	580)	b
581)	c	582)	b	583)	a	584)	d
585)	c	586)	d	587)	b	588)	b
589)	a	590)	c	591)	c	592)	c
593)	c	594)	c	595)	b	596)	c
597)	c	598)	d	599)	b	600)	b
601)	a	602)	b	603)	c	604)	a

605)	b	606)	b	607)	c

Click here to Download more Question Bank for Additional Chapters.

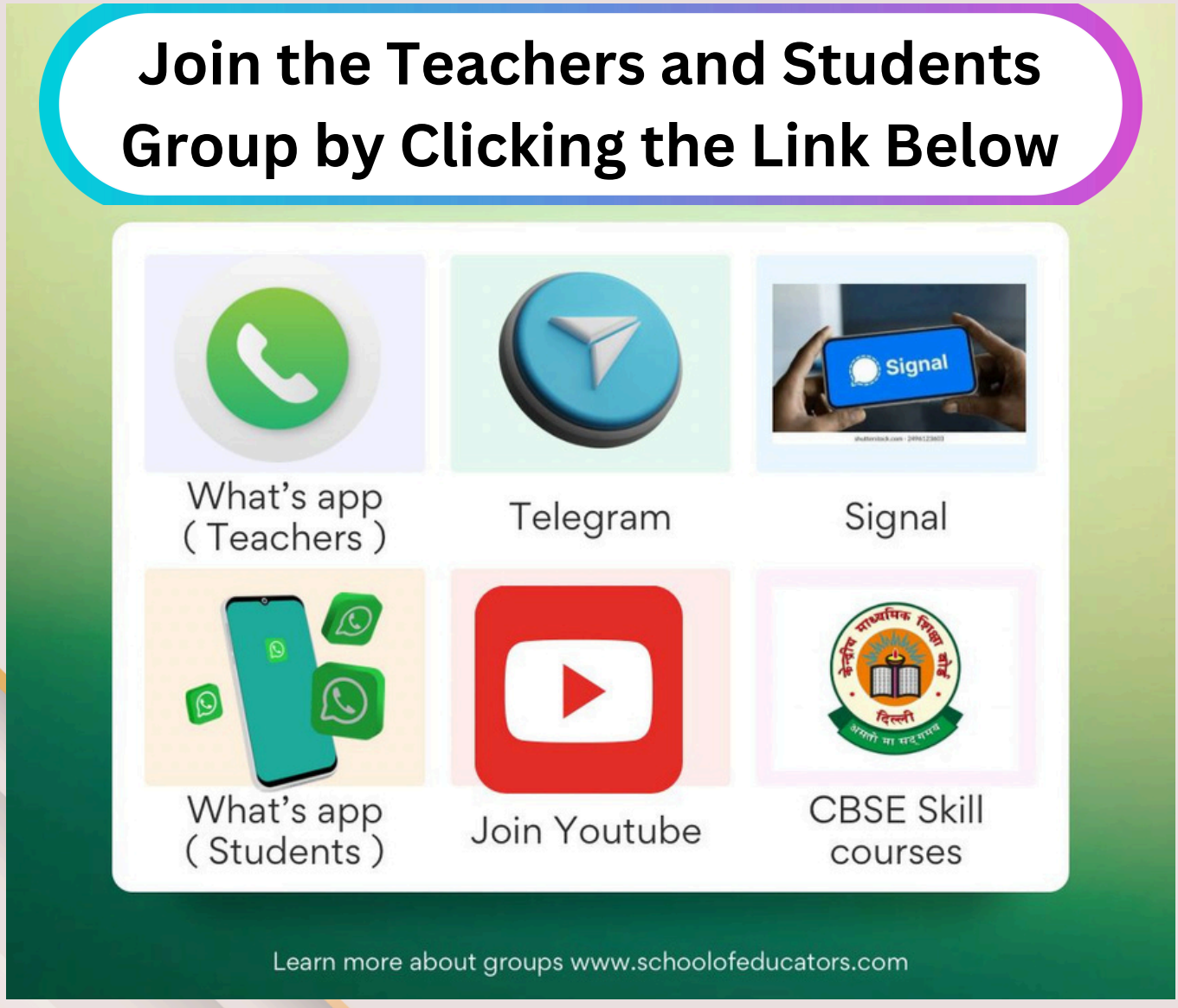


Dear Teachers and Students,

Join School of Educators' exclusive WhatsApp, Telegram, and Signal groups for FREE access to a vast range of educational resources designed to help you achieve 100/100 in exams! Separate groups for teachers and students are available, packed with valuable content to boost your performance.

Additionally, benefit from expert tips, practical advice, and study hacks designed to enhance performance in both CBSE exams and competitive entrance tests.

Don’t miss out—join today and take the first step toward academic excellence!



SCHOOL OF EDUCATORS

SOE

Learn | Unlearn | Relearn

JOIN OUR WHATSAPP GROUPS

FOR FREE EDUCATIONAL RESOURCES

JOIN SCHOOL OF EDUCATORS WHATSAPP GROUPS FOR FREE EDUCATIONAL RESOURCES

We are thrilled to introduce the School of Educators WhatsApp Group, a platform designed exclusively for educators to enhance your teaching & Learning experience and learning outcomes. Here are some of the key benefits you can expect from joining our group:

BENEFITS OF SOE WHATSAPP GROUPS

- **Abundance of Content:** Members gain access to an extensive repository of educational materials tailored to their class level. This includes various formats such as PDFs, Word files, PowerPoint presentations, lesson plans, worksheets, practical tips, viva questions, reference books, smart content, curriculum details, syllabus, marking schemes, exam patterns, and blueprints. This rich assortment of resources enhances teaching and learning experiences.

- **Immediate Doubt Resolution:** The group facilitates quick clarification of doubts. Members can seek assistance by sending messages, and experts promptly respond to queries. This real-time interaction fosters a supportive learning environment where educators and students can exchange knowledge and address concerns effectively.

- **Access to Previous Years' Question Papers and Topper Answers:** The group provides access to previous years' question papers (PYQ) and exemplary answer scripts of toppers. This resource is invaluable for exam preparation, allowing individuals to familiarize themselves with the exam format, gain insights into scoring techniques, and enhance their performance in assessments.

- **Free and Unlimited Resources:** Members enjoy the benefit of accessing an array of educational resources without any cost restrictions. Whether its study materials, teaching aids, or assessment tools, the group offers an abundance of resources tailored to individual needs. This accessibility ensures that educators and students have ample support in their academic endeavors without financial constraints.

- **Instant Access to Educational Content:** SOE WhatsApp groups are a platform where teachers can access a wide range of educational content instantly. This includes study materials, notes, sample papers, reference materials, and relevant links shared by group members and moderators.

- **Timely Updates and Reminders:** SOE WhatsApp groups serve as a source of timely updates and reminders about important dates, exam schedules, syllabus changes, and academic events. Teachers can stay informed and well-prepared for upcoming assessments and activities.

- **Interactive Learning Environment:** Teachers can engage in discussions, ask questions, and seek clarifications within the group, creating an interactive learning environment. This fosters collaboration, peer learning, and knowledge sharing among group members, enhancing understanding and retention of concepts.

- **Access to Expert Guidance:** SOE WhatsApp groups are moderated by subject matter experts, teachers, or experienced educators can benefit from their guidance, expertise, and insights on various academic topics, exam strategies, and study techniques.

Join the School of Educators WhatsApp Group today and unlock a world of resources, support, and collaboration to take your teaching to new heights. To join, simply click on the group links provided below or send a message to +91-95208-77777 expressing your interest.

Together, let's empower ourselves & Our Students and inspire the next generation of learners.

Best Regards,
Team
School of Educators

Join School of Educators WhatsApp Groups

You will get Pre- Board Papers PDF, Word file, PPT, Lesson Plan, Worksheet, practical tips and Viva questions, reference books, smart content, curriculum, syllabus, marking scheme, toppers answer scripts, revised exam pattern, revised syllabus, Blue Print etc. here . Join Your Subject / Class WhatsApp Group.

Kindergarten to Class XII (For Teachers Only)

Class 1

Class 2

Class 3

Class 4

Class 5

Class 6

Class 7

Class 8

Class 9

Class 10

Class 11 (Science)

Class 11 (Humanities)

Class 11 (Commerce)

Class 12 (Science)

Class 12 (Humanities)

Class 12 (Commerce)

Kindergarten

Subject Wise Secondary and Senior Secondary Groups (IX & X For Teachers Only)

Secondary Groups (IX & X)

Click Here to Join
SST

Click Here to Join
Mathematics

Click Here to Join
Science

Click Here to Join
English

Click Here to Join
Hindi-A

Click Here to Join
IT Code-402

Click Here to Join
Hindi-B

Click Here to Join
Artificial Intelligence

Senior Secondary Groups (XI & XII For Teachers Only)

Click Here to Join
Physics

Click Here to Join
Chemistry

Click Here to Join
English

Click Here to Join
Mathematics

Click Here to Join
Biology

Click Here to Join
Accountancy

Click Here to Join
Economics

Click Here to Join
BST

Click Here to Join
History

Click Here to Join

Geography

Click Here to Join

Sociology

Click Here to Join

Hindi Elective

Click Here to Join

Hindi Core

Click Here to Join

Home Science

Click Here to Join

Sanskrit

Click Here to Join

Psychology

Click Here to Join

Political Science

Click Here to Join

Painting

Click Here to Join

Vocal Music

Click Here to Join

Comp. Science

Click Here to Join

IP

Click Here to Join

Physical Education

Click Here to Join

APP. Mathematics

Click Here to Join

Legal Studies

Click Here to Join

Entrepreneurship

Click Here to Join

French

Click Here to Join

IT

Click Here to Join

Artificial Intelligence

Other Important Groups (For Teachers & Principal's)

Click Here to Join

Principal's Group

Click Here to Join

Teachers Jobs

Click Here to Join

IIT/NEET

Join School of Educators WhatsApp Groups

You will get Pre- Board Papers PDF, Word file, PPT, Lesson Plan, Worksheet, practical tips and Viva questions, reference books, smart content, curriculum, syllabus, marking scheme, toppers answer scripts, revised exam pattern, revised syllabus, Blue Print etc. here . Join Your Subject / Class WhatsApp Group.

Kindergarten to Class XII (For Students Only)

Class 1

Class 2

Class 3

Class 4

Class 5

Class 6

Class 7

Class 8

Class 9

Class 10

Class 11 (Science)

Class 11 (Humanities)

Class 11 (Commerce)

Class 12 (Science)

Class 12 (Humanities)

Class 12 (Commerce)

Artificial Intelligence
(VI TO VIII)

Subject Wise Secondary and Senior Secondary Groups (IX & X For Students Only)

Secondary Groups (IX & X)

SST

Mathematics

Science

English

Hindi

IT Code

Artificial Intelligence

Senior Secondary Groups (XI & XII For Students Only)

Physics

Chemistry

English

Mathematics

Biology

Accountancy

Economics

BST

History

Click Here to Join

Geography

Click Here to Join

Sociology

Click Here to Join

Hindi Elective

Click Here to Join

Hindi Core

Click Here to Join

Home Science

Click Here to Join

Sanskrit

Click Here to Join

Psychology

Click Here to Join

Political Science

Click Here to Join

Painting

Click Here to Join

Music

Click Here to Join

Comp. Science

Click Here to Join

IP

Click Here to Join

Physical Education

Click Here to Join

APP. Mathematics

Click Here to Join

Legal Studies

Click Here to Join

Entrepreneurship

Click Here to Join

French

Click Here to Join

IT

Click Here to Join

AI

Click Here to Join

IIT/NEET

Click Here to Join

CUET

Groups Rules & Regulations:

To maximize the benefits of these WhatsApp groups, follow these guidelines:

1. Share your valuable resources with the group.
2. Help your fellow educators by answering their queries.
3. Watch and engage with shared videos in the group.
4. Distribute WhatsApp group resources among your students.
5. Encourage your colleagues to join these groups.

Additional notes:

1. Avoid posting messages between 9 PM and 7 AM.
2. After sharing resources with students, consider deleting outdated data if necessary.
3. It's a NO Nuisance groups, single nuisance and you will be removed.
   - No introductions.
   - No greetings or wish messages.
   - No personal chats or messages.
   - No spam. Or voice calls
   - Share and seek learning resources only.

Please only share and request learning resources. For assistance, contact the helpline via WhatsApp: +91-95208-77777.

Join Premium WhatsApp Groups
Ultimate Educational Resources!!

Join our premium groups and just Rs. 1000 and gain access to all our exclusive materials for the entire academic year. Whether you're a student in Class IX, X, XI, or XII, or a teacher for these grades, Artham Resources provides the ultimate tools to enhance learning. Pay now to delve into a world of premium educational content!

Click here for more details

Click Here to Join

Class 9

Click Here to Join

Class 10

Click Here to Join

Class 11

Click Here to Join

Class 12

📣 Don't Miss Out! Elevate your academic journey with top-notch study materials and secure your path to top scores! Revolutionize your study routine and reach your academic goals with our comprehensive resources. Join now and set yourself up for success! 📚🌟

Best Wishes,

Team
School of Educators & Artham Resources

SKILL MODULES BEING OFFERED IN MIDDLE SCHOOL

Artificial Intelligence

Beauty & Wellness

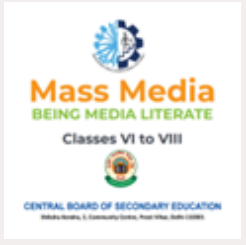
Design Thinking & Innovation

Financial Literacy

Handicrafts

Information Technology

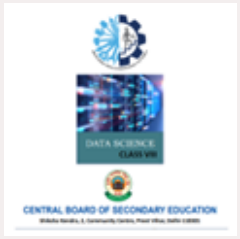
Marketing/Commercial Application



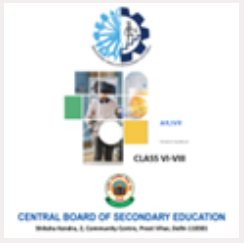
Mass Media - Being Media Literate

Travel & Tourism

Coding



Data Science (Class VIII only)

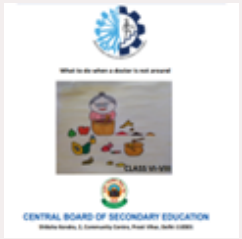


Augmented Reality / Virtual Reality

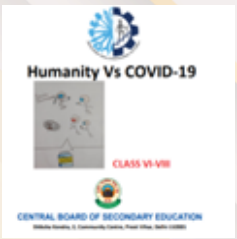
Digital Citizenship

Life Cycle of Medicine & Vaccine

Things you should know about keeping Medicines at home

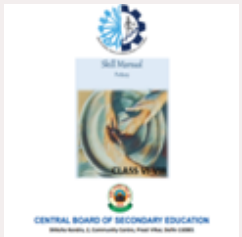


What to do when Doctor is not around



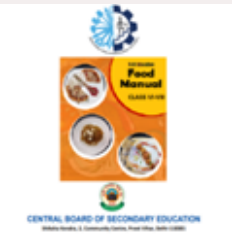
Humanity & Covid-19

Blue Pottery

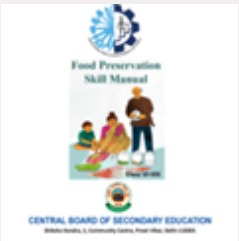


Pottery

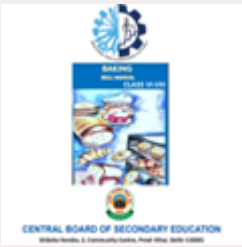
Block Printing



Food



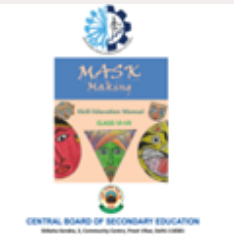
Food Preservation



Baking

Herbal Heritage

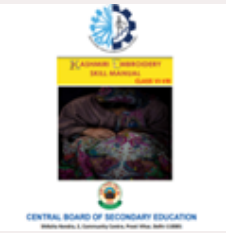
Khadi



Mask Making

Mass Media

Making of a Graphic Novel



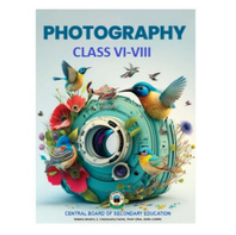
Kashmiri Embroidery

Embroidery

Rockets

Satellites

Application of Satellites

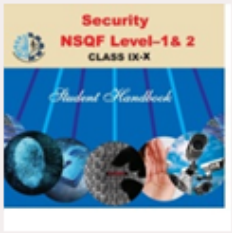


Photography

SKILL SUBJECTS AT SECONDARY LEVEL (CLASSES IX – X)

Retail

Information Technology



Security

Automotive

Introduction To Financial Markets

Introduction To Tourism

Beauty & Wellness

Agriculture

Food Production

Front Office Operations

Banking & Insurance

Marketing & Sales

Health Care

Apparel

Multi Media

Multi Skill Foundation Course

Artificial Intelligence

Physical Activity Trainer

Data Science

Electronics & Hardware (NEW)

Foundation Skills For Sciences (Pharmaceutical & Biotechnology)(NEW)

Design Thinking & Innovation (NEW)

SKILL SUBJECTS AT SR. SEC. LEVEL (CLASSES XI – XII)

Retail

InformationTechnology

Web Application

Automotive

Financial Markets Management

Tourism

Beauty & Wellness

Agriculture

Food Production

Front Office Operations

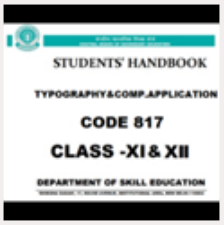
Banking

Marketing

Health Care

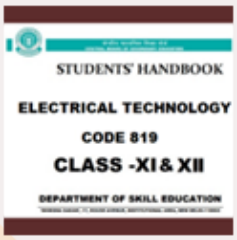
Insurance

Horticulture



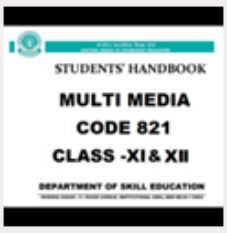
Typography & Comp. Application

Geospatial Technology



Electrical Technology

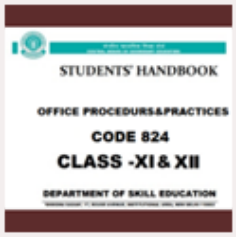
Electronic Technology



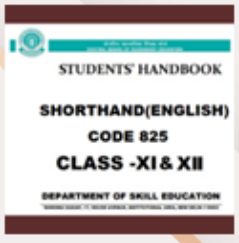
Multi-Media

Taxation

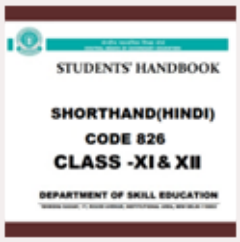
Cost Accounting



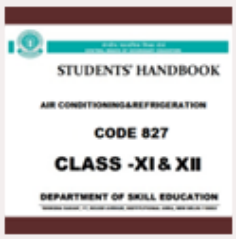
Office Procedures & Practices



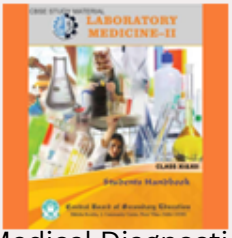
Shorthand (English)



Shorthand (Hindi)



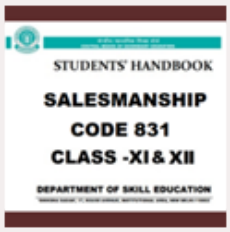
Air-Conditioning & Refrigeration



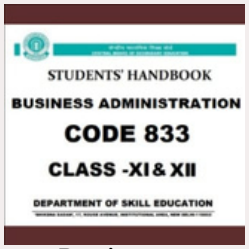
Medical Diagnostics

Textile Design

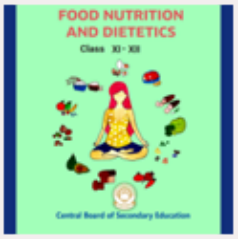
Design



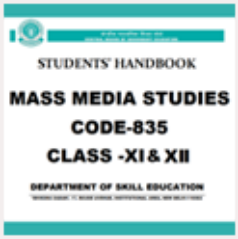
Salesmanship



Business Administration



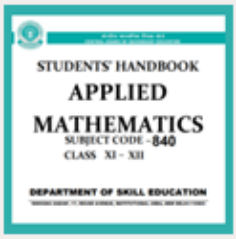
Food Nutrition & Dietetics



Mass Media Studies

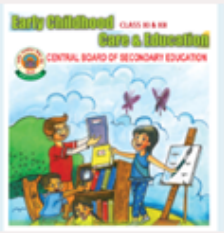
Library & Information Science

Fashion Studies



Applied Mathematics

Yoga

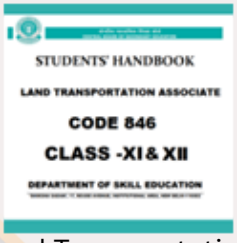


Early Childhood Care & Education

Artificial Intelligence

Data Science

Physical Activity Trainer(new)



Land Transportation Associate (NEW)

Electronics & Hardware (NEW)

Design Thinking & Innovation (NEW)

Join School of Educators Signal Groups

You will get Pre- Board Papers PDF, Word file, PPT, Lesson Plan, Worksheet, practical tips and Viva questions, reference books, smart content, curriculum, syllabus, marking scheme, toppers answer scripts, revised exam pattern, revised syllabus, Blue Print etc. here . Join Your Subject / Class signal Group.

Kindergarten to Class XII

Click Here to Join
Class 1

Click Here to Join
Class 2

Click Here to Join
Class 3

Click Here to Join
Class 4

Click Here to Join
Class 5

Click Here to Join
Class 6

Click Here to Join
Class 7

Click Here to Join
Class 8

Click Here to Join
Class 9

Click Here to Join
Class 10

Click Here to Join
Class 11 (Science)

Click Here to Join
Class 11 (Humanities)

Click Here to Join
Class 11 (Commerce)

Click Here to Join
Class 12 (Science)

Click Here to Join
Class 12 (Humanities)

Click Here to Join
Class 12 (Commerce)

Click Here to Join
Kindergarten

Click Here to Join
Artifical intelligence

Subject Wise Secondary and Senior Secondary Groups IX & X

Secondary Groups (IX & X)

SST

Mathematics

Science

English

Hindi-A

Hindi-B

IT Code-402

IT

Artifical intelligence

Senior Secondary Groups XI & XII

Physics

Chemistry

English

Mathematics

Biology

Accountancy

Economics

BST

History

Click Here to Join

Geography

Click Here to Join

Sociology

Click Here to Join

Hindi Elective

Click Here to Join

Hindi Core

Click Here to Join

Home Science

Click Here to Join

Sanskrit

Click Here to Join

Psychology

Click Here to Join

Political Science

Click Here to Join

Painting

Click Here to Join

Vocal Music

Click Here to Join

Comp. Science

Click Here to Join

IP

Click Here to Join

Physical Education

Click Here to Join

APP. Mathematics

Click Here to Join

Legal Studies

Click Here to Join

Entrepreneurship

Click Here to Join

French

Click Here to Join

IIT/NEET

Click Here to Join

Artifical intelligence

Click Here to Join

CUET

Join School of Educators CBSE Telegram Groups

Join us on Telegram

Kindergarten

Join us on Telegram

All classes

Join us on Telegram

Class 1

Join us on Telegram

Class 2

Join us on Telegram

Class 3

Join us on Telegram

Class 4

Join us on Telegram

Class 5

Join us on Telegram

Class 6

Join us on Telegram

Class 7

Join us on Telegram

Class 8

Join us on Telegram

Class 9

Join us on Telegram

Class 10

Join us on Telegram

Class 11 (Sci)

Join us on Telegram

Class 11 (Com)

Join us on Telegram

Class 11 (Hum)

Join us on Telegram

Class 12 (Sci)

Join us on Telegram

Class 12 (Com)

Join us on Telegram

Class 12 (Hum)

Join us on Telegram

JEE/NEET

Join us on Telegram

CUET

Join us on Telegram

NDA, OLYMPIAD, NTSE

Join us on Telegram

Principal Professional Group

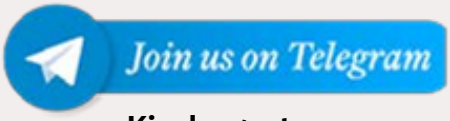
Join us on Telegram

Teachers Professional Group

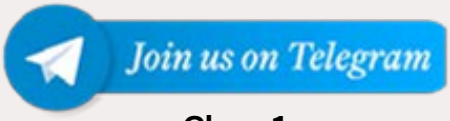
Join us on Telegram

Project File Group

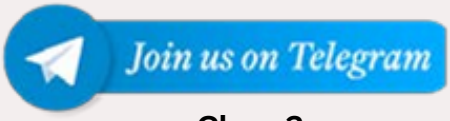
Join School of Educators ICSE Telegram Groups



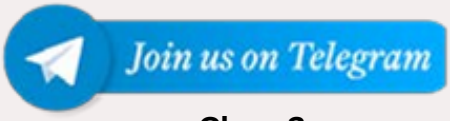
Kindergarten



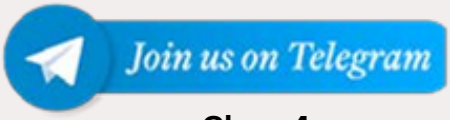
Class 1



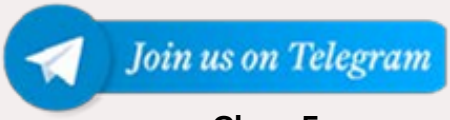
Class 2



Class 3

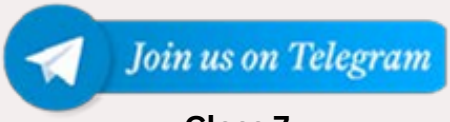


Class 4

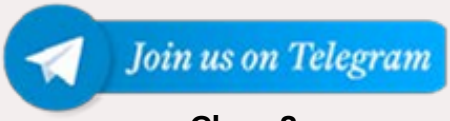


Class 5

Class 6



Class 7



Class 8

Class 9

Class 10

Class 11 (Sci)

Class 11 (Com)

Class 11 (Hum)

Class 12 (Sci)

Class 12 (Com)

Class 12 (Hum)

ARTHAM
RESOURCE MATERIAL
FOR IIT EDUCATIONAL RESOURCES

SCHOOL OF EDUCATORS
SOE
Learn | Unlearn | Relearn

www.educatorsresource.in